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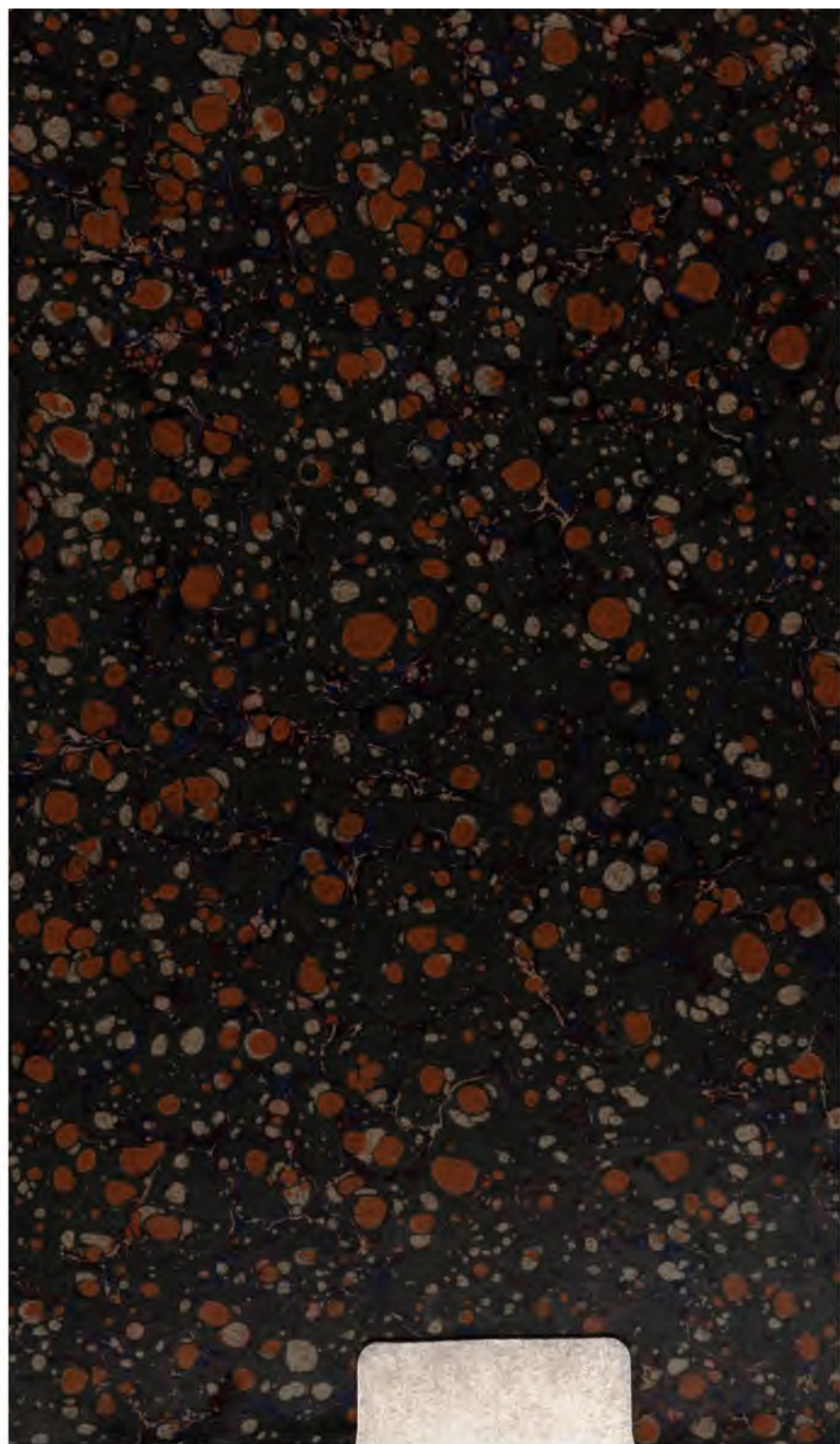
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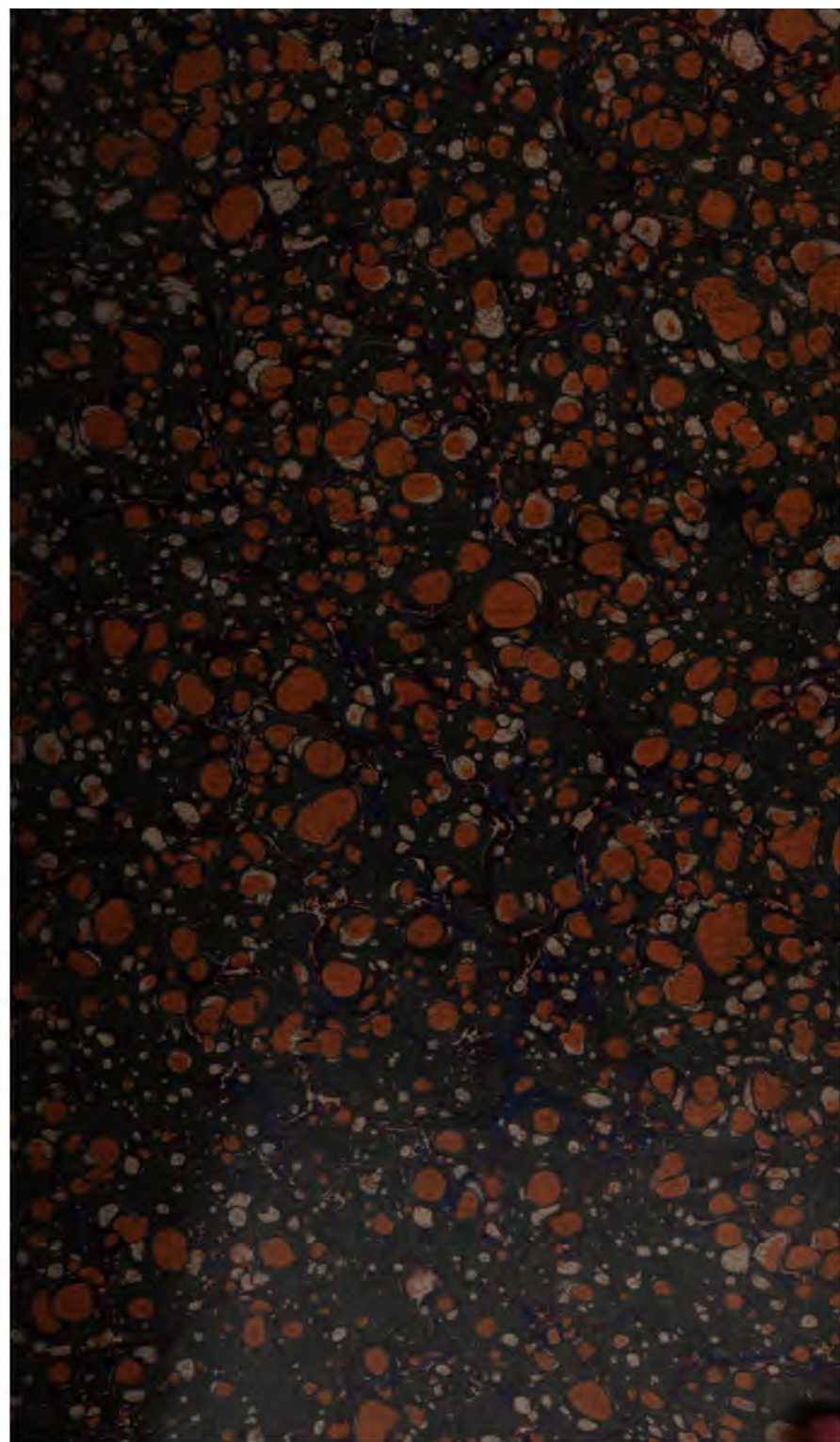
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THE
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"Nature is ever making signs to us, she is ever whispering to us the beginnings of her secrets; the scientific man must be ever on the watch, ready at once to lay hold of Nature's hint however small, to listen to her whisper however low."

Michael Foster.

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ERRATA.

Page 186, line 10 from bottom, for "*Vesper*," read "*Vespa*."
 " 227, " 8 " " for "*Ou*," read "*On*."
 " 265, " 16 " top, for "*Britany*," read "*Brittany*."
 " 273, " 14 " bottom, for "*Hedychrydium*," read "*Hedychridium*."

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[VOLUME XXXV.]

SOME REMARKS ON THE *PHYTOSUS BALTICUS*, KRAATZ, AND
P. NIGRIVENTRIS, CHEVR., OF BRITISH COLLECTIONS.

BY G. C. CHAMPION, F.Z.S.

Canon Fowler (Col. Brit. Islands, ii, p. 170) treats *P. balticus*, Kraatz, and *P. nigriventris*, Chevr., as forms of one species, he at the same time calling attention to some specimens in his collection, from Mablethorpe, Lincolnshire, with the hind body much widened posteriorly and very distinctly punctured. As these insects are regarded as specifically distinct by continental authorities, and both occur in Britain, it is worth while to again call attention to the matter. They are easily separable by the characters given by Dr. Kraatz (Berl. ent. Zeitschr., 1859, pp. 52, 53):—

Brunneus seu brunneo-testaceus, cinereo-pubescent, capite infuscato, punctatissimo, abdomine crebre punctato, nitidulo, nigro-piceo, basin versus magis minusve infuscato, apice fusco-testaceo, elytris thorace dimidio brevioribus ..

balticus, Kraatz.*

Stramineus, cinereo-pubescent, capite basi infuscato, confertim perspicue punctato, abdomine confertissime punctato, opaco, segmentis quarto quintoque totis nigris, sexto basi nigro, apice rufo, elytris thorace dimidio brevioribus

nigriventris, Chevr.

It may be noted that *P. nigriventris* averages much larger in size, the largest specimen in my collection measuring nearly $3\frac{1}{2}$ millim. in length, and that it has the hind body much more widened posteriorly than in *P. balticus* and more distinctly punctured; the black band,

* Originally described and figured by Dr. Kraatz under the name of *P. nigriventris* (Stett. ent. Zeit., xiv. p. 257, t. 3, fig. 6; Naturg. Ins. Deutschl., ii, p. 43).

too, is very sharply defined, and confined to the fourth and fifth segments and the basal half of the sixth, whereas in *P. balticus* the hind body is nigro-piceous, with the base and apex indeterminately testaceous.

P. balticus is not uncommon in various places along the south coast (Southsea, Hayling, Sandown, Ventnor, Weymouth, Whitsand Bay, &c.), and occurs also on the coasts of Northumberland, Scotland, and Ireland (Co. Meath), as well as on the east and west coasts of England. *P. nigriventris* appears to be very rare with us, as I have only seen it from the Chesil Beach, whence Mr. J. J. Walker sent me a few specimens in 1886, these agreeing precisely with Dr. Kraatz's definition. Mr. Fowler's examples from Mablethorpe probably belong to it.

P. spinifer and *P. balticus* (which were at one time supposed to be sexes of the same insect) frequently occur in company, and Mr. Walker has taken specimens of all three species in one day at Weymouth.

Horsell, Woking :

December 9th, 1898.

CORIXA SAUNDERSI, A NEW SPECIES OF AQUATIC RHYNCHOTA
FROM ENGLAND.

BY G. W. KIRKALDY, F.E.S.

During the last few weeks Mr. Edward Saunders has very kindly lent me various specimens which I wished to examine in view of my forthcoming memoir upon the British *Corixidæ*. Amongst these was a male from Chobham (which Mr. Saunders had considered some years ago to be probably distinct), which we thought might belong to the same species as two rather doubtful males in the Perth Museum, collected some years ago by Dr. F. B. White in Glen Tilt. After a very careful examination of these and a number of indubitable examples of various species, I had no hesitation in determining the two specimens from Glen Tilt to be varieties of *C. nigrolineata*, Fieb. (= *Fabricii*, Fieb.), and the Chobham male to be an undescribed species allied to, but very distinct from, *C. fossarum*, Leach, and *C. nigrolineata*, Fieb. Since then Mr. Saunders has communicated two more males and one female, and as my memoir will be concerned only, as regards descriptions at least, with secondary sexual characters, I now describe the new species. In naming it *C. Saundersi*, I am glad

to be able to pay this small tribute to one who has contributed to such a degree towards our knowledge of the British *Rhynchota*, and to whom I am much indebted for kindly assistance in my own studies.

CORIXA SAUNDERSI, n. sp.

Belongs to subgenus *Basileocorixa*, Kirk. (= *Corixa* of most authors), and to the group of *nigrolineata*, Fieb.

Pronotum, clavus and basal half of corium rastrate, rest of corium rather feebly rastrate.

Width of pronotum one-half greater than its length, lateral angles irregularly rounded, base gently rounded. Macropterous. Intermediate tibia and claws subequal, each about three-eighths longer than tarsus. Metaxyphus very short, triangular, subequilateral.

Pronotum and elytra brownish-black; pronotum with 7—8 fairly straight, rather narrow, yellow lines (occasionally splitting); lines at base of clavus entire, somewhat dilated; lines of corium and membrane and those towards the apex of clavus, undulated and interrupted, *not* continuously divided by dark, regular, longitudinal areas. Corio-membranal suture not very distinct, not margined with pale yellow. Meso- and metasternum and basal three or four segments of abdomen, blackish.

Length, 5 mm.

♂. Frontal fovea elongate ovoid, rather narrow and shallow, oval at base, extending a little posteriorly beyond the apical margins of the eyes. Pala cultrate, dorsum arcuate, not produced backwards, base rather broader than the apex of tibia; concave side with a slightly arcuate row of about twenty blunt, rounded teeth. Strigil very large, oblong-oval, length twice as great as breadth, composed of four (♂ five) irregular, sinuately-margined rows of striæ.

♀. Pala apparently not distinguishable from that of *fossarum*, ♀.

CHOBHAM, Surrey (*June*); 3 ♂♂, 1 ♀; E. Saunders.

The type (♂), one male and the female, are in Mr. Saunders's collection, the other male he has kindly presented to me.

C. Saundersi differs from *nigrolineata* in being much more feebly rastrate on the corium, and by the form of the metaxyphus; from *fossarum* by the longer pronotum and greater number of pronotal transverse lines, and by the form of the metaxyphus. As regards the males, the new species is separable from *nigrolineata* by the form of the strigil and of the frontal fovea, and from *fossarum* by the form of the palæ and of the strigil. It is, moreover, a much smaller insect than the latter, one example barely reaching 5 mm., while *fossarum* is rarely, if ever, under 6 mm., and often attains to 6½ mm. It is closely allied to the Scandinavian *C. pallidula*, J. Sahlb. (which is personally unknown to me), the male of which apparently somewhat resembles *C. nigrolineata* in the form of the frontal fovea.

LIST OF *EPHEMERIDÆ* HITHERTO OBSERVED IN ALGERIA,
WITH LOCALITIES.

BY THE REV. A. E. EATON, M.A., F.E.S.

The species of *Ephemeridæ* indicated in this article as natives of Algeria probably represent two-thirds of the May-fly constituents of the fauna of that country, taking a liberal estimate of the number likely to be indigenous. Only one species of wide geographical dispersion has been recorded (in Lucas' "Exploration Scientifique") and the additions here made to the list were not obtained as the result of any especial attention directed to this Family on the part of the collector; they should be reckoned merely as the outcome of casual observations by a trained eye. The method of keeping specimens alive for description and for delineation of details under the microscope was not resorted to, insects of other Orders being the principal objects of quest. Where the collector is not specified, the writer was the captor of the species.

POTAMANTHUS LUTEUS, Linn.—Constantine; near a ford of the Roummel about two miles south of the town (1 ♂ im., May 29th, 1895).

HABROPHLEBIA MODESTA, Hag.—Bône; beyond the Orphelinat, near the confluence of the Châ Bellareou and the Oued Deb (3 ♂ im., May 11th, 1896).

HABROPHLEBIA sp.—Azazga (1 ♂ im., September 2nd, 1893).

CÆNIS HALTERATA, Fab.—Biskra; abundant along the conduit and by the river towards the barrage (10 ex., May 17th, 1893; 1 ex., February 2nd, and 1 ex., February 7th, 1894; and 1 ex., April 16th, 1895). In the desert near Hamman-es-Salahin, 1 ♀ ex. was found upon the surface of a brackish streamlet.

BÆTIS RHODANI, Pict.—Blida (1 ♂ im., February 28th, 1893); other smaller examples from Fraix Vallon, near Algiers (October 27th, 1892), and Tizi-Ouzou (November 8th, 1892) are doubtful.

CENTROPTILUM LUTEOLUM, Mül.—Bône; stream at the foot of the mountain beyond the Aïle des Veillards (1 ♂ im., April 7th, and another May 3rd, 1896).

CENTROPTILUM ALGIRICUM, sp. nov.—*Imago (dried)*.—Thorax above pitch-black. Dorsum of abdomen pitch-brown, translucent in segments 2–6; setæ and forceps (all but the basal joints of the latter, which are brownish) whitish. Fore-leg umber-, or light pitch-brown, more translucent in the tibia and tarsus than in the femur; hinder-legs with slightly amber-tinted femora, and whitish tibiae and tarsi. Wings vitreous; the principal longitudinal veins very faint whitish-amber tinted from some standpoints, with the roots of the subcosta and radius browner, and with about six (4 to 8) usually simple and almost straight oblique cross-veinlets in the pterostigmatic region of the fore-wing. Hind-wing and forceps somewhat as



in *Centropt. pennulatum*, Etn. Length of wing, 5 mm.

During life (to the best of my recollection after a lapse of six years) the turbinate eyes are reddish-chocolate brown, and the apical joint in the forceps limb was less slender than in *Centropt. pennulatum*—in fact comparable to its counterpart in *Cloëon simile* (cf. Trans. Linn. Soc. [2] Zool., vol. 3, pl. xvii).

Hab.—Tizi-Ouzou; near the village of Tissadourt, about an hour's walk S. W. of the town 1 ♂ and 1 ♀ im., November 4th, 1892), and Mirabeau (6 ♂ im., November 5th, 1892).

Rather like *Centropt. tenellum* in colouring (except in having unbanded femora), but in no way related thereto as a species.

CENTROPTILUM sp.—Biskra (1 ♀ im., April 16th, 1894).

CLOËON DIPTERUM, Linn.—Ain Séfra, Oran (1 ♂ and 1 ♀ im., *Blause*); Algiers, (*Lucas*). Occasionally found in hotels, resting on walls or curtains, at Algiers, Azazga, Constantine, Bône, and Biskra, often entering as subimago to moult. Males sometimes assemble over the Route de la Corniche in the gorge of the Roummel at Constantine. Streamlets of strongly brackish water in the neighbourhood of Hammam-es-Salahin, near Biskra, are inhabited by the nymphs. See Ent. Mo. Mag., June, 1895. p. 144.

CLOËON BUFULUM, Mül.—Constantine; near the confluence of the Roummel and the Merzoug (1 ♀ im., October 17th, 1895); Le Tarf (on the road between Bône and La Calle), at a "*krelidge*" (1 ♂ im., June 29th, 1896). Lac Tonga, near La Calle; abundant at the base of Koudia Deidei, assembling over the edge of the marsh bordering the lake (4 ♂ im., July 16th, 1896). Biskra (1 ♀ im., April 18th, 1894).

RHITHROGENA. sp. —.—Biskra; near the market garden above the barrage (1 ♂ im., March 19th, 1895). The occurrence of an insect of this genus in this locality is noteworthy, and is suggestive of the possibility of its having travelled down from the higher valleys penetrating between the spurs of the Aures.

ECDYURUS FLUMINUM, Pict. (*angustipennis*, Ramb.).—Biskra; common a little above the barrage over the swifter parts of the stream, ranging to and fro rather close to the surface of the water, about 6 p.m. In the adult fly the 1st joint in the ♂ fore-tarsus is not quite half the length of the 2nd joint [*e. g.*, as 12 is to 25] (1 ♂ im., April 14th and 16th, 1894; 4 ♂ im., March 26th, 1897).

ECDYURUS VENOSUS, Fab., var. ?.—Constantine; occasionally met with on slopes dominating the Roummel at moderate distances from the water. 1st joint in the adult ♂ fore-tarsus two-thirds the length of the 2nd joint [*e. g.*, as 12 is to 18] (1 ♂ im., October 3rd, 1893; 2 ♂ im., 1 ♂ subim., May 18th and 20th, 1895, respectively).

The lateral stripes of the abdomen are evanescent, and in the pterostigmatic region of the fore-wing the cross veinlets do not anastomose so freely as to form two regular rows of cellules; but in other respects the imago resembles *E. venosus*. The subimago has wings of rather a different tint from the typical form of this species.

Seaton, Devon: October, 1898.

PROTECTIVE RESEMBLANCE OF *PENTHINA GENTIANANA* AND
EUPÆCILIA ROSEANA.

BY HERBERT FORTESCUE FRYER.

In the autumn of last year I collected a number of teasel heads, seed heads of *Dipsacus sylvestris*, containing larvæ which Mr. Barrett informed me were those of *Penthina gentianana* feeding on the pith of the receptacle, and *Eupæcilia roseana* feeding on the seeds themselves.

The heads were put in an outhouse for the winter, and watered occasionally to prevent their becoming too dry. In due time the imagines appeared.

My motive in writing the present note is to call attention—probably unnecessary in the case of those who have bred them—to the protective resemblance shown by both these species towards their environment.

The habit of *P. gentianana* on its emergence is to sit with head buried between the spinous scales of the receptacle, and with the posterior portion of its wings projecting a little beyond them. Roughly divided (as the insect is into a light upper and a dark lower part) its resemblance when in this position to a bird's excrement is very noticeable.

If a number of teasel heads be examined, it will be found that in some instances the inner part of the seeds, *i. e.*, that part which is in contact with adjacent seeds, assumes a bright pink colour. Now, *E. roseana* has a very frequent habit of sitting lengthways along the spines of the scales above referred to, and here again, the resemblance of the insect, with its colouring of rosy-pink shading into yellow, to a partly displaced seed is worthy of notice.

The larvæ of the Tortrices being concealed feeders, protective resemblance is of use to them only in the perfect state, but in other groups it is otherwise, and it would be an interesting work to take a number of species and tabulate them, dividing them into three classes, *i. e.*, those which are protected in the first, in the first and second, and in all three stages of existence.

Classification by structural characters alone, and unless checked by habit of life and method of development, may have the effect on the Insecta that misfortune is said to have on the human race, "make them acquainted with strange bedfellows."

It is not impossible that facts elicited by this systematic study of protective resemblance might be found to be of some assistance in the determination of the phylogeny or relative age of a genus: for it

is fair to assume that the protective form or colouring has been acquired since its birth, *i. e.*, at some period during its existence; and may not a genus which exhibits this protective resemblance throughout all three stages (larval, pupal and imaginal) be assumed *primâ facie* to be of more recent origin than one of which one stage only is thus distinguished?

The Priory, Chatteris:

November 12th, 1898.

ON SOME INSULAR *COLEOPTERA* COLLECTED BY
MR. J. J. WALKER, R.N., F.L.S.

BY D. SHARP, M.D., M.A., F.R.S.

The *Coleoptera* here dealt with were submitted to me several years ago by Mr. Walker, who, knowing the interest I feel in Insular Entomology, anticipated that I should work them out. Doing this has been delayed, however, because the larger part of the specimens consist of obscure forms of *Curculionidæ*, requiring a great deal of time for their satisfactory elucidation. The descriptions of the *Colydiidæ* included in this paper were drawn up about ten years ago. Mr. Perkins has described two species of *Curculionidæ*, the publication of which will follow. The other species of that family contained in Mr. Walker's collection must still wait for determination. They consist chiefly of *Cossonides*, a subfamily of great difficulty, and of which no collection containing many authentic types is available to me.

Fam. COLYDIIDÆ.

XUTHIA PARALLELA.

Xuthia parallela, Sharp, Journ. Linn. Soc. Zool., xix, 1885, p. 70.

Resolution Bay, Taou-ata Island, Marquesas; seven examples. Also a fragment from O-Hiva-oa Island.

These specimens do not differ in any respect from Japanese exponents.

BITOMA DISCICOLLIS, *n. sp.*

Latiuscula, subdepressa, opaca, fusca, antennis pedibusque testaceis, elytris rufis, nigro-variegatis.

Long., $3\frac{1}{2}$ —4 mm.

Antennæ with large, abrupt, two-jointed club. Head dull, rounded in front, without distinct sculpture, but with a few depressed flavescent setæ, and a fine straight carina along the inner margin of each eye. Thorax transverse, on each side with two raised costæ, the sides explanate and minutely crenate, the disc deplanate, sub-impressed; the surface finely granulate, and bearing minute, depressed, flavescent setæ. Elytra of a dull red colour, but much marked with black; the black

marks consisting of spots more or less united; each has four sharply raised costæ, and a series of crenate punctures runs along each side of each costa; the costæ have fine depressed flavescent setæ on their summits, and the serial punctures also bear similar depressed setæ, which are arranged so that their tips touch the costæ, and thus form a sort of minute, angular, reticulate pattern.

Ahurei Bay, Rap-à (Oparo) Island.

This is allied to a New Zealand species, *B. insularis*, White.

KEKLASMENUS, n. gen.

Tarsi triarticulati. Antennæ decemarticulatæ, clava uniarticulata, apice constricto et pubescente.

Antennæ with the first joint short, concealed beneath the side of the head, 2nd joint stout, rather longer than broad, 3rd elongate and slender, the following six nearly similar to one another, 10th joint rather long, receiving the true terminal joint, which projects beyond it as a pubescent point. Eyes moderately large, very convex, moderately finely faceted, bearing a few erect setæ. Clypeus truncate in front, emarginate on each side. Labrum prominent, transverse, truncate in front. Thorax subquadrate; front coxæ moderately widely separated, prosternal process projecting very little beyond them, scarcely at all bent upwards. Mesosternum slightly separating the middle coxæ; metasternum elongate. The five ventral segments subequal in length. Epipleura quite horizontal and flat, rather broad, continued to the suture at the apex without diminishing in width. Legs rather stout; tibiæ abruptly bent at a right angle immediately outside the articulation, finely and minutely pubescent externally, not hispid. 1st joint of tarsi rather longer than 2nd, which is small, 3rd much longer than the 1st and 2nd together.

The occurrence of a *Colydien* with three-jointed feet is of considerable systematic interest, but I have already intimated that this discrepancy is not of family importance in the *Colydiidæ*, and *Keklasmenus* seems to completely demonstrate this, as in other respects it appears to be an ordinary *Colydien*, allied to *Bitoma* and *Cicones*. It is true that the antennæ are a little aberrant, but this is of little importance, for in *Pycnomerus* we have already a case where the antennæ, from being 11-jointed, become in a series of species gradually 10-jointed, by the suture between the 10th and 11th joints becoming more or less obsolete; and as regards this point *Keklasmenus* may be looked on as a form having either 10-jointed or 11-jointed antennæ, according as the pubescent extremity is treated as a separate joint or the reverse.

The tarsi appear to me only 3-jointed; nevertheless, I can, I think, see on the hind feet the traces of a division of the basal joint, so that the 3-jointed tarsus is probably due to a diminution in size of the true basal joint, and a concomitant consolidation with the true second joint, which in this manner becomes the basal joint.

KEKLASMENUS SERRATICOLLIS, n. sp.

Niger, opacus, antennis pedibusque piceis; prothorace lateribus regulariter serratis; corpore superne setulis minutis erectis sat dense vestito.

Long., 4 mm.

Antennæ slender, picescent. Head flat above, densely and coarsely granulate. Thorax about as long as broad, parallel-sided, but with the sides divided, so that each forms about ten denticulations, the whole surface closely and coarsely granulate. Elytra with a seriate sculpture, consisting of fine striæ formed by punctures and minute crenate elevations, the interstices being broad, and each bearing a series of minute granules.

Taou-ata Island, and O-Hiva-oa Island, Marquesas; eight specimens.

This insect was found by Mr. Walker under the bark of *Artocarpus incisa*, the bread-fruit tree.

APLANETES, nov. gen.

Corpus sat elongatum, subdepressum, subparallelum, habitus fere generis Rhizophagi. Antennæ 11-articulatæ, clava laxa, triarticulata. Pedes graciles; tibiæ basi pertenui, apicem versus latiores, extus muticæ. Coxæ omnes parum distantes.

Head broad, eyes rather large, moderately prominent, finely faceted. Basal joint of antennæ nearly concealed behind the side of the epistome. Anterior coxæ quite small, globular, separated by a slight process of the prosternum, which does not extend beyond them, and is not bent up. Metasternum elongate. First ventral segment a good deal longer than the second, which itself is longer than the third, fourth slightly shorter than the third, terminal segment broad, not so long as the penultimate. Tarsi with three short, subequal joints, and a fourth elongate joint.

This may be placed next the New Zealand genus *Rhizonium*, but it is not closely allied thereto.

APLANETES FASCIATUS, n. sp.

Subdepressus, sat elongatus, nitidus, niger, elytrorum basi late rufo antennis pedibusque testaceis; elytris seriatim punctatis.

Long., 2 mm.

Antennæ rather small and slender; 2nd joint rather longer than broad; 3rd joint quite small, but longer than those following; 9th, 10th, 11th forming an elongate, not very broad, loosely articulated club. Head rather closely punctate, epistome ferruginous. Thorax slightly longer than broad, the sides not curved but distinctly narrowed behind, and a little before the base with a very minute prominence, behind which they are a little more contracted; the hind angles rectangular; the surface shining black, moderately closely and coarsely punctured, and with a minute fovea on each side quite at the base. Elytra with regular series of fine punctures, interstices impunctate.

O-Hiva-oa Island, Marquesas; one specimen.

PYCNOMERUS INSULARIS, *n. sp.*

Sat nitidus, nigerrimus tarsis piceis; capite thoraceque crebrius fortiter punctatis, hoc versus basin parum profunde biimpresso; elytris profunde crenato-striatis, interstitiis sat latis, remote sed discrete punctatis.

Long., $4\frac{1}{4}$ mm.

Antennæ short and stout, terminal joint not divided, but with pubescent apex. Head densely and coarsely punctate, with a large, deep impression on each side. Thorax about as long as broad, considerably narrowed behind, densely and coarsely punctate, the two longitudinal impressions behind the middle subobsolete. Elytra with the interstices nearly as broad as the striæ, these latter deep, and bearing large deep punctures, which look as if each puncture were formed of two joined together. Last ventral segment very deeply depressed; the preceding segment with a slight elevation in the middle behind.

Resolution Bay, Taou-ata Island, Marquesas; two specimens.
Rarotonga Island; one specimen.

PYCNOMERUS DUBIUS, *n. sp.*

Nitidus, niger, antennis pedibusque piceis; capite thoraceque crebre fortiter punctatis, hoc versus basin parum profunde biimpresso; elytris profunde crenato-striatis, interstitiis sat latis, remote punctatis. Long., $3\frac{1}{2}$ mm.

This appears to be so closely allied to *P. insularis* that I am doubtful whether it will prove to be more than a variety thereof. It is, however, smaller, not so intensely black in colour, and has the thorax more sparingly punctate, the irregular space that separates the two indistinct longitudinal depressions being polished and shining. In other respects scarcely different from *P. insularis*.

Pitcairn Island; two examples.

Fam. MYCETOPHAGIDÆ.

MYCETOPHAGUS CHILENSIS.

Mycetophagus chilensis, Phil., Stett. ent. Zeit., 1864, p. 376.

Juan Fernandez; seven specimens.

Cambridge: November, 1898.

Queries as to dialect names of insects.—Can any of your readers who are acquainted with the northern counties, especially Cumberland, supply me with the scientific equivalents of the four following dialect names? "*Twing*" (perhaps "*Ting*"), a small red insect, said by the superstitious to occasion fatal illness to cattle. "*Gutterwasp*," somewhat resembles a wasp in appearance, but is not so large, and is frequently seen in the neighbourhood of ditches. "*Sleugh*" ("*sleuff*"), a white grub found in moist places, an excellent bait for trout, reputed to be the grub of "*Cleg*" (*Hæmatopota pluvialis*). "*Attermite*" or "*attermus*," a grub found in dungheaps, reputed to be the larva of the "cockchafer" or "lousy beetle" (*Geotrupes*)?—E. W. PREVOST, Newnham, Gloucester: December 11th, 1898.

Moths at electric light.—In the "Illustrierte Zeitschrift für Entomologie," December 1st, 1898, is an interesting article by Prof. Karl Eckstein on the moths observed at Rüttnick on two nights, viz., August 5th–6th from midnight till 2 a.m., and the 6th–7th from 8 p.m. to 3 a.m. No less than 16,484 specimens were obtained in the two nights, and of these 1575 were *Lithosia deplana*, 4941 *L. quadra*, 8591 *Liparis monacha*, and 1086 of a species of *Scoparia*. Of the 41 species noticed no other exceeded 40 in individuals, and the majority were less than 10. Of *L. quadra* there occurred on the 5th–6th 228 ♂ and 31 ♀, and of *L. monacha* on the same night 144 ♂ and 5 ♀. On the night of the 6th–7th the numbers were observed hourly.

Of *L. quadra* 2 ♂ and 1 ♀ occurred between 8 and 9, 42 ♂ and 20 ♀ between 9 and 10, 74 ♂ and 156 ♀ between 10 and 11, 167 ♂ and 204 ♀ between 11 and 12, 1375 ♂ and 380 ♀ between 12 and 1, 395 ♂ and 46 ♀ between 1 and 2, and 1356 ♂ and 464 ♀ between 2 and 3.

Of *L. monacha* 48 ♂ and 20 ♀ were noticed between 8 and 9, 1078 ♂ and 145 ♀ between 9 and 10, 2209 ♂ and 259 ♀ between 10 and 11, 1798 ♂ and 110 ♀ between 11 and 12, 1853 ♂ and 38 ♀ between 12 and 1, 388 ♂ and 16 ♀ between 1 and 2, and 467 ♂ and 13 ♀ between 2 and 3.

Clearly the electric light may be made a powerful agent in the destruction of noxious insects, such as *L. monacha* is in the forests of Germany. But the attraction is far greater for the ♂ than for the ♀. Of *L. quadra* the total number consisted of 3639 ♂ and 1302 ♀, and of *L. monacha* of 7985 ♂ and only 606 ♀.—Ebs.

Coleophora inulæ, Wk., in Herefordshire, with notes on its habits.—In Dr. J. H. Wood's collection I lately found, standing under the name of a closely allied species, seven specimens of a *Coleophora* which is undoubtedly *inulæ*, Wk., as proved both by the imagines and the larval cases. One or two of them were taken at large, but the majority were bred in July, 1891, from larvæ on *Inula dysenterica* collected in July, 1890. Dr. Wood, who has seen the larvæ feeding in the same spot on several occasions since then, has only met with the insect amongst a small patch of *I. dysenterica* growing near water in the corner of an open rough pasture in a valley near Tarrington, and he tells me that the larva there certainly takes two seasons to feed up, and in a year when any moths are to be found, one may search in vain for full-fed larvæ, and *vice versâ*. It seems clear that the eggs are laid in July, and they no doubt hatch soon after, and the larvæ hibernate quite small: they feed through the following spring and summer, becoming full fed about the end of July, when they wander about in search of a suitable place in which to spin up: they pass their second winter as full-fed larvæ, pupating probably about May, and the moths emerge in the following June or July. The case is very striking in appearance, being nearly double the length and double the breadth of that of its ally, *C. troglodytella*, and with the neck and mouth of such a shape that it lies nearly parallel with the under-surface of the leaf, whereas that of *troglodytella* stands more or less perpendicularly to it. The occurrence of *C. inulæ* in Herefordshire is of extreme interest, for it has only up to now been known as British from the fact that the late Mr. W. Machin once found, about thirty-six years ago, several cases on *Inula dysenterica*, near Leith Hill in Surrey, and bred a few moths from them [Ent., xv, 204 (1882)]. Mr. Machin repeatedly searched for the species again in that and other localities but in vain. In

Germany the larva has been found on *Inula germanica* by Epplesheim, and on *Eupatorium cannabinum* by Sorhagen.—EUSTACE R. BANKES, Corfe Castle: *November 4th*, 1898.

Occurrence of Laspeyresia (Stigmonota, Gn.) dorsana, Fb., in Herefordshire.—On May 28th last Dr. J. H. Wood found, in West Herefordshire, *Laspeyresia dorsana* flying freely and plentifully, at about 5 p.m., in an upland pasture where its food-plant, *Lathyrus macrorrhizus*, Wimm. (= *Orobis tuberosus*, L.), was growing in abundance, and *Vicia orobis* was not uncommon. The capture of *L. dorsana* in Herefordshire is worthy of special notice, for Meyrick, HB. Brit. Lep., p. 512 (1895), gives its distribution in Britain as extending only from "York to Caledonian Canal," nor are any other British localities for it, south of Yorkshire, known to me. I am responsible for the identification of Dr. Wood's specimens as *L. dorsana*, Fb.—ID.: *November 19th*, 1898.

Remarkable aberration of Laspeyresia dorsana, Fb.—Among the few examples of *Laspeyresia dorsana* captured by Dr. Wood on the above-mentioned occasion was a male, in which, on each fore-wing, the typical white curved dorsal blotch is entirely obsolete, except that its apex is represented in the usual position by an oval white spot. In Ent. Mo. Mag., 2nd ser., viii, 43-44 (1897), I drew attention to another striking aberration of this species, in which the white dorsal blotch is only represented by two white spots, one on the dorsal margin, and the other where the apex of the blotch would ordinarily stand.—ID.

A third brood of Pieris brassicae.—In his note under the above heading in Ent. Mo. Mag., 2nd ser., ix, 278, Mr. J. J. Walker mentions the appearance at Sheerness, on October 23rd last, of a fresh though small specimen of *Pieris brassicae*, and says that he has never before seen any evidence of a third brood in Britain. It will therefore probably interest him and others to know that, by a curious coincidence, I watched, on that selfsame day, a specimen of *P. brassicae*, in fine condition, flying about near here in the mid-day sunshine. It was of full size, but unfortunately I omitted to take a note of whether it was a male or female.—ID.: *Dec. 4th*, 1898.

Andrena ferox and other Hymenoptera at Dodington, Kent.—A single male of this species was beaten by me out of a hawthorn blossom late one afternoon at the end of May, 1896, at Dodington, Kent; a bitterly cold east wind was blowing at the time, and the bee fell benumbed into the tray, and was fortunately recognised. Bees have until this year been plentiful in spring in this locality; whether the bad weather or the ploughing up of some rough chalky fields was the cause of their absence this year I cannot say.

Of the genus *Andrena*, *cingulata*, Fab., *atriceps*, Kirb., *rosæ*, Panz., var. *spinigera*, Sm., *cineraria*, Linn., *nitida*, Fourc., *fulva*, Schr., *nigroænea*, Kirb., *Clarkella*, Kirb., *Gwynana*, Kirb., *apicata*, Sm., *præcox*, Scop., *varians*, Rossi, *helvola*, Linn., *fasciata*, Nyl., *albicus*, Kirb., *labialis*, Kirb., *minutula*, Kirb., *nana*, Kirb., *dorsata*, Kirb., and *Wilkella*, Kirb., have all occurred. *A. angustior* has been taken at Wichling, close by, but I have not observed it myself. The common *Nomadæ* at times abound on the cherry blossoms and elsewhere. Of the genus *Osmia*, *rufa*, Linn., *pilicornis*, Sm., *cærulescens*, Linn., *leucomelana*, Kirb., *bicolor*, Schk., have all occurred.

Of other *Hymenoptera*, I may mention *Passalæcus monilicornis*, Dbm., *Crabro lituratus*, Panz., *interruptus*, De Geer, *podagricus*, V. d. L., and *pubescens*, Shuck. The male of *Eucera longicornis* occurs every year, but for a long time I could not get the female. In the spring of 1896, however, I was told there was a spot in an orchard where some bees were flying over the ground in great numbers, and on investigating the occurrence, found that some dozen square yards of ground near a sheep trough were full of *Eucera* burrows; there were a few *Andrena* burrows mixed with the *Eucera*. The burrows were not repeated in 1897 or 1898, so far as I could make out. Twice while collecting in this locality have I fancied that I was capturing *Odynerus basalis*, Smith, but on each occasion it proved to be only one of the ordinarily coloured species (probably *spinipes*), with the base of the abdomen thickly covered with the yellow larvæ of *Meloe* in such a manner as to entirely alter the appearance of the insect. Is there any ground for supposing that the yellow and the black larvæ of these beetles belong to different species of *Meloe*? I know that the yellow ones, which I have bred from the egg, are the larvæ of *proscarabæus*, and would suggest that the black are those of *violaceus*. I think it clear that they are not the larvæ of the same species in different stages, as has I believe been suggested. If they are, the yellow must be the earlier form, as I have bred these from the egg, but having taken the black larvæ early in April, and of the smaller size, and the yellow larvæ as late as June in the same year, after the black larvæ had disappeared, it is most unlikely that the yellow can develop into the black. My only objection to the theory that they are different species is that I have never been able to satisfy myself that *proscarabæus* and *violaceus* are really distinct as what I consider to be intermediate forms occur; can it be a case of dimorphism? No other species of *Meloe* is to be found at Dodington, Kent, where both the larval forms are at times common.—A. J. CHITTY, 27, Hereford Square, W.: October, 1898.

Aculeate Hymenoptera in Warwickshire and the New Forest.—Being fortunate enough to meet with Aculeates rather freely this season (1898) in Sutton Park, a few remarks on the more important captures may prove interesting. Several species were taken in considerable numbers by paying visits to their nests early in the morning (7.30—8.30) and digging them up.

Myrmosa melanocephala—six females and one male, four of which were captured on a fallen tree root during hot sunshine. *Stigmus Solskyi*—one in my garden, an addition to the Sutton list. *Passalæcus monilicornis*—three males of this rare species. *Diadontus tristis*—very common, burrowing in a wall. *Psen pallipes*—taken at Sutton and Droitwich. *Mimesa bicolor*—over fifty, principally obtained by digging before breakfast; males flying outside nests as early as 8 o'clock. *Crabro interruptus*—thirty specimens of this grand insect were taken in a timber yard; apparently they provision their nests with any kind of *Diptera*, as I captured them with the following: *Polietes lardaria*, *Musca vomitoria*, *Spilogaster communis*, *Calliphora azurea*, *Lucilia Cesar*, *Syrphus albostrigatus*: I believe this is the first record from Sutton Coldfield, but Mr. Martineau has taken it about six miles away. *C. peltatus* and *cribrarius*—both dug up in the early morning. *Sphecodes gibbus*, *affinis* and *pilifrons*—last named very common on Michaelmas daisy flowers. *Halictus leucopus* (Droitwich), *subfasciata*, *atricornis*—males of latter very common on old tree root in Sutton Park. *Andrena coitana*, *humilis*, *labialis*, *helvola* (one), *angustior* (one)—

all five additions to the Sutton list; large numbers of *humilis* and *analis* were dug up from their nests before breakfast; by this means one gets them before they have made an excursion, and consequently free from pollen. *Nomada ruficornis*, *bifida*, *ochrostoma*, *ferruginata*—the last (an addition) was obtained in considerable numbers before 10.30 in the mornings (later hardly any signs of them) flying round the nests of its host, *Andrena humilis*. *Megachile Willughbiella* and *centuncularis* were met with commonly on sunflowers, and nesting in an old gate post; one male of *ligniseca* on a flower head, this being a record for this district. *Calioxys elongata*—met with here for the first time this year. All five species of *Psithyrus* taken, including the black form (♂ and ♀) of *campestris*. *Bombus hortorum*, var. *subterraneus*, and all three sexes of var. *Harrisellus*. *Latreillellus*—the type taken for the first time; only var. *distinguendus* met with in previous seasons. *Jonellus*—one male, an addition, and *pratensis* appeared commonly, some of the specimens being very brightly coloured.

The following taken in New Forest district during the first week in June, weather very unfavourable: *Formica exsecta*—found a nest in New Forest of this rare ant, but only brought away about a dozen, as I did not recognise the species; this is a new locality. *Ammophila hirsuta* (Bournemouth). *Priocnemis fuscus*, *viaticus*, *Sphecodes dimidiatus*, *similis* (New Forest, the last named also at Bournemouth). *Halictus minutissimus*, *Nomada ferruginata*, *furva*, *Fabriciana*, *Melecta armata* (New Forest), *Andrena Wilkella*, *labialis* (Swanage), *chrysosceles*, *minutula*, *angustior*, *helvola* (New Forest).—RALPH C. BRADLEY, Sutton Coldfield: December, 1898.

Aculeate Hymenoptera at Newquay, North Cornwall.—To the little list of captures recorded in the number of the Ent. Mo. Mag. for last February, I have the following species to add, taken in August:—*Lasius fuliginosus*, Latr.: a nest in an earth bank on the Headland; *Tetramorium caespitum*, Linn.: nests very common under rocks and stones at Pentire Point; *Myrmosa melanocephala*, Fab.: at Penau Porth; *Methoca ichneumonides*, Latr.: common at Penau Porth, the specimens being mostly the small black variety; *Cerceris labiata*, Fab.: the golf-links; *Colletes fodiens*, Kirby.: the golf-links; *Calioxys vectis*, Curt., *Pompilus plumbeus*, Fab., *Salix affinis*, V. de L., *Megachile argentata*, Fab., *Dasypoda hirtipes*, Ltr., *Andrena pilipes*, Fab., were all fairly plentiful, but distinctly the most conspicuous and almost the most common species was the usually rare *Salix affinis*.

Holywell, between Crantock and Penau Porth, about eight miles from Newquay, with its great sand-hills, wild moor, and pretty little stream winding its way to the beach, its banks fringed with luxuriant vegetation and beautiful wild flowers, proved the most attractive collecting ground, and in June and July would doubtless yield many rare species.—G. A. JAMES ROTHNEY, 8, Versailles Road, Anerley, S.E.: November, 1898.

Toxoneura muliebris, Har., in *Pall Mall*.—On going to luncheon at my Club on August 1st one of the waiters said he had got a fly for me which he had caught by placing a wine glass over it. I expected to find something quite common, but it proved to be *Toxoneura muliebris*, which I at once transferred to a pill box.

It is not uncommon in my garden at Lyndhurst, and I have heard of a speci-

men being taken by some children at South Kensington, but think the above locality worth recording.—FREDK. C. ADAMS, 68, St. Ermin's Mansions, S.W. : Nov., 1898.

Asilus crabroniformis, L., near Lyndhurst.—Although I have collected regularly in the New Forest for several years, I never met with this conspicuous Dipteran, or heard of anyone else taking it in the Lyndhurst district before this year. I was, therefore, somewhat surprised when returning on August 9th to hear from Mr. J. King, whose acquaintance I had made during my previous visit, that he had not only obtained specimens from Gulliver, taken near Brockenhurst, but had also captured it himself near Holmesley; and my surprise was turned to pleasure when two days later I took one myself on the path over Phillip's Hill between Foxlease and Brick Kiln enclosures. I am afraid, however, it was only a straggler, as I saw no more, although constantly over the same ground, and also searched for it in likely places round about. I should be glad if any Dipterists who have collected in the New Forest would give me their own experience with this fly.—ID.

Additions to the Liverpool District list of Coleoptera during 1898.—Local students of the *Coleoptera* have been able to add about twenty-three species to those already recorded as occurring in that part of Lancashire and Cheshire which is represented by the "Liverpool District list." These additions are to a great extent due to the labours of Mr. Dutton of Hilsby and Dr. Billups of Warrington, gentlemen who have more especially explored the Weaver Valley and the country round Warrington, a district hitherto somewhat neglected by local Coleopterists. Here have occurred *Anchomenus micans*, *Hydroporus umbrosus*, *Corymbites cupreus*, with its variety *ærginosus*, *Donacia crassipes*, *D. menyanthidis*, *Phytodecta olivacea*, and *Melasoma populi*. In Delamere Forest, which is in the same district, and perhaps the richest locality faunistically in the two counties, we have *Hydaticus seminiger*, *Strangalia quadrifasciata*, *Donacia cinerea*, *D. affinis*, *Galerucella sagittaria*, *G. tenella*, *Lochmæa cratægi*, *Phyllobrotica quadrimaculata*, and *Eriirrhinus nereis*. In the Ledsham district the following are new records:—*Calodera riparia*, *Scirtes hemisphæricus*, *Anthicus humilis*, *Phytobius comari*, and *Ceuthorrhynchidius melanarius*; at Bidston, *Corymbites tessellatus*; and at Southport, *Byrrhus fasciatus*. Other species worth notice, although not new records, are *Copelatus agilis*, *Bembidium decorum*, and *Cryptorrhynchus lapathi* rediscovered near Warrington, *Eubrychius velatus*, and *Melandrya caraboides* in Delamere, *Megacronus inclinans* in Eastham Wood, and the black variety, *hieroglyphicus* of *Clytus mysticus*, taken near Chester by Mr. Newstead (exhibited by Mr. J. J. Walker at a recent Meeting of the Entomological Society).—W. E. SHARP, Ledsham : November 24th, 1898.

Aphthona nonstriata, Goeze, var. *ænescens*, Weise, in Wales.—The variety *ænescens*, Weise,* of this species does not appear to have been recorded as British, but it has been found by Mr. J. J. Walker between Pembroke and Tenby, and by Mr. B. Tomlin at Candleston, near Bridgend, Glamorganshire. *A. ænescens* differs from *A. nonstriata*, Goeze (*cærulea*, Fourcr.), in having the upper surface greenish-æneous in colour. The insect was figured and described by Panzer under the name of *Altica hyoseyami*. Both forms appear to be attached to *Iris pseudacorus*.—G. C. CHAMPION, Horsell, Woking : December 1st, 1898.

* Naturg. Ins. Deutschl., vi, p. 912 (1888).

Obituary.

F. G. Waterhouse, C.M.Z.S.—We learn from an Australian paper of the death of Mr. F. G. Waterhouse, of Adelaide, South Australia, at the age of 84. Mr. Waterhouse was the youngest brother of the late G. R. Waterhouse of the British Museum. He went to Australia in 1852 in the first steamship that reached the colonies. At first he was engaged in surveying; but he was an enthusiastic naturalist, and devoted much time to collecting. He sent large collections, chiefly of *Coleoptera*, to England, and many of his discoveries were described by Pascoe and others, some by McLeay and Castelnau in Australia. He formed a considerable collection of birds, fishes and insects, which he presented to the Adelaide Museum, which he was mainly instrumental in founding, and of which he was the first Curator. It was soon after his appointment as Curator that he went as naturalist in the famous John McDougall Stuart expedition, which crossed Australia in 1861–3; but although he did much valuable work, most of his specimens had to be left behind to enable the explorers to return alive, he himself nearly losing his life. He retired from the Museum in 1882. He leaves four sons and one daughter.

Stephen Barton, F.E.S., died at Bristol on November 17th, aged 78 years. In 1852 he visited Australia, where he resided two or three years, and made extensive collections of *Coleoptera*, including many species which, on his return to England, were unknown to science. Some of these were described from his specimens by Bates and other authors. Mr. Barton also collected at the Cape and other places *en route*. An arrangement to join his friend, Henry Walter Bates, in his journey to the Amazons having fallen through, Mr. Barton settled down to business in Bristol, but he continued to take much interest in Entomology, and amassed an immense collection of British and foreign insects, chiefly *Coleoptera*, which will probably be sold by auction shortly in London. He became a Fellow of the Entomological Society of London in 1865, but did not contribute to its "Transactions." For over thirty years he was President of the Entomological section of the Bristol Naturalists' Society, and long acted as Honorary Curator to the Entomological department of the Bristol Museum, contributing many valuable additions to the collection. Though better known to an older generation, he will be much missed by his many friends, especially by those in the West of England, to whom his collections were well known.—A. E. HUDD.

James Hardy, LL.D., of Old Cambus, Cockburnspath, N.B., died in October last, aged 84 years. Personally almost unknown "down south," Mr. Hardy was a tower of strength in Berwickshire and the adjoining counties, a man of wide knowledge in all branches of Natural History and Folk-lore; as Secretary for much of a long life of the Berwickshire Naturalists' Club, he contributed to make that institution one of the best known and most useful local Societies. At present we know but little of his personal history. His notes and papers, dating from 1834, probably number nearly 100, mostly in the publications of northern Societies, that of Berwickshire in particular. Most of them were on insects, especially the economic branch of the subject, and he established new genera and species in *Coleoptera*, *Hemiptera* (*Coccidæ*, &c.), *Thysanura*, &c. To British Coleopterists he was, perhaps, best known as the compiler (with T. J. Bold) of "A Catalogue of the *Coleoptera* of Northumberland and Durham" (one of the most important of local lists), in the Transactions of the Tyneside Naturalists' Field Club, from 1846 to 1852 (also

separately). Writing to Mr. J. W. Douglas in 1892, he said he had recently completed editing the correspondence of Dr. George Johnston, of Berwick (the well-known marine Zoologist), for Mr. David Douglas, of Edinburgh, and also two vols. for the Folk-lore Society. His industry was as untiring as his knowledge was wide. The University of Edinburgh conferred on him the honorary degree of LL.D. No doubt full justice will be done to his memory and labours in Scotland and the North of England. This short notice must suffice to show that we here in London have not forgotten the work of a remarkable man and thorough naturalist.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *October 17th, 1898.*—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. Wainwright exhibited a specimen of *Periplaneta australasiae* from an orchid house at Fargandenny, in Perthshire, where it has been observed for three years now, and has caused a deal of damage. Mr. R. C. Bradley, a series of *Andrena humilis*, with its parasite, *Nomada ferruginata*, from Sutton Park, where he found a largish colony of the former this year, among which the parasite was numerous. Mr. W. Harrison, insects from Witherslack, *Acronycta menyanthidis*, *Lycæna minima*, &c.; also *Callimorpha dominula* from the Stroud district, and other insects. Mr. G. H. Kenrick, *Lycæna Arion* from the Cornish locality, also other insects from the same place, including several fine examples of the var. *conversaria* of *Boarmia repandata*, *Acronycta ligustri*, *Lobophora sexalisata*, *Macaria alternata*, &c. Mr. J. T. Fountain, a collection of insects made in the valley of the Wye above Tintern during six days' collecting last August; it showed the locality to be rather rich, the insects including *Apatura Iris*, *Thecla w-album* and *T. quercus*, *Drepana unguicula*, *Cerigo matura*, *Ephyra trilinearia*, *Cleora glabraria*, *Melanippe unangulata*, *Larentia olivata*, and many others. Mr. A. H. Martineau, a little lot of insects bred from bramble stems at Solihull, *Pemphredon lethifer*, Shuck., with its parasites, *Elampus auratus*, L., and *æneus*, Fab. Mr. G. T. Bethune-Baker, two drawers of Palearctic *Vanessidæ*.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *November 4th, 1898.*

Mr. Gayner exhibited a collection of *Lepidoptera* from northern Sweden and Finland, with some notes on their distribution and occurrence. *Argynnidæ* were very numerous, especially *A. Ino* and sub-species *Hela* of *A. Selene*; *A. Pales*, var. *Arsilache*, was locally abundant in marshy places; others were *A. Aglaia*, *A. Euphrosyne*, var. *Fingal*. Among other insects were an uncertain *Melitæa*, *Polyommatus chryseis*, *P. Helle*, *P. virgaurea*, var. *Oranula*, *L. Ægon*, *Plebeius Optilete*, *C. Davus*, *E. Embla*, *Colias Palæno*, *P. napi*, *P. Machaon*, *V. Antiopa*. Mr. Richard, cocoons of *Plusia moneta*.

November 18th.—Mr. Gayner exhibited specimens of *Pterophorus rhododactylus* from South England. Mr. Jones, a number of *Senta maritima* from Cambridgeshire, showing some well-marked varieties.—L. DONCASTER, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 October 13th.—Mr. J. W. TUTT, F.E.S., President, in the Chair.

Mr. Russell, The Limes, Southend, Catford, was elected a Member.

Mr. Drury, F.R.H.S., presented a large number of Tortrices and *Tineæ* to the Society's collections. Messrs. Ashdown and Lucas presented numerous specimens of Dragon-flies.

Mr. Moore exhibited a series of *Polia chi* from Yorkshire ; they were taken at rest on dark stone hedges, and were most conspicuous even from a distance. Mr. Fremlin for Mr. Auld, eleven hybrids between *Pygæa curtula* and *P. anachoreta*, bred by Dr. Knaggs in April, 1898, together with typical specimens of both species for comparison. It was noted that the markings for the most part followed the female parent, *P. curtula* ; he also showed various races of the *Tephrosias*, *T. laticaria* and *T. biundularia* ; a fine bred series of *Phorodesma bajularia* from the New Forest ; specimens of *Zonosoma annulata*, var. *obsoleta*, from Devon ; unusually dark forms of *Emydia cribrum* ; a few *Eugonia autumnaria*, bred from a female taken at Folkestone ; and a bred series of *Hemithea strigata* (*thymiaria*). Mr. Turner, a bred specimen of *Vanessa polychloros* from Horsham, much darker and comparable to some of those produced in Mr. Merrifield's temperature experiments. Mr. Kaye, a Syntomid moth, *Macroneme ladis*, from Venezuela, and a species of wasp which it mimicked ; it had a remarkable development of the hairs on the long posterior legs. Mr. West, of Greenwich, specimens of the Hemipteron, *Ploiaria vagabunda* from Reigate. Mr. Tutt read a paper, entitled "Scientific Aspects of Entomology."—
 H. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: November 2nd, 1898.—Mr. G. H. VERRALL, Vice-President, in the Chair.

Mr. Ambrose Quail, of Palmerston North, New Zealand, was elected a Fellow of the Society.

Mr. Merrifield exhibited some *Melitæa Aurinia* from Touraine forced and cooled as pupæ, the latter being much the darker and more strongly marked, some *Euchloë cardamines* from Sussex, those cooled having the apices of the wings darker and the discal spots smaller than those which had been forced, and some *Colias Edusa* from eggs laid by two normal females taken in Savoy, two out of the five reared being of the var. *Helice* ; the marginal border of one male which had been forced was very pale and much suffused with long yellow scales : he also showed four *Papilio Machaon* ; two of them forced as pupæ had their dark parts very pale and their tails long and slender, the two which had been cooled having the dark parts much extended in area and darkened in hue, their tails being short and broad. These results, which were to be obtained with winter as well as summer pupæ, corresponded with those previously obtained by Dr. Standfuss. Mr. J. J. Walker, two winter nests of *Porthesia chrysorrhæa* from the Isle of Sheppey, where the species had lately become very common. Dr. Mason, a Buprestid larva found among Baltic timber at Burton-on-Trent ; this had been among wood in a box since the beginning of July last, and there was scarcely a trace of frass. Marsham had recorded the escape of a larva of *Buprestis splendens* from the wood of a desk in the Guildhall, which had stood there for more than twenty years (Lin. Trans., vol. x). It is pro-

bable that the growth is extraordinarily slow, and consequently that the larva can maintain life for very long periods in most unfavourable conditions. Mr. Blandford called attention to similar cases which he had brought before the Society; it appeared likely to him, from what was known about such insects as *Callidium variabile*, which was occasionally bred from dry wood at long intervals, that these species were not abnormally slow-growing under normal conditions, but became so in dry timber, in which they probably sustained life with difficulty, especially when the outside of the wood was varnished. Mr. Waterhouse, for Mr. G. W. Kirkaldy, living examples in various stages of a *Caryoborus* in nuts of *Attalea funifera* from Brazil; Elditt had described the attacks of an allied species upon the seeds of *Cassia fistula*. Mr. Tutt, for Dr. Chapman, a series of Swiss examples of *Zygena exulans*, and discussed the differences between them and the Scotch form. Papers were communicated by Mr. W. F. H. Blandford "On some Oriental *Scolytidæ* of Economic importance with Descriptions of five New Species," and by Mr. van der Wulp (through Colonel Yerbury) on "*Asilidæ* from Aden and its neighbourhood."

November 16th, 1898.—Mr. R. TRIMEN, F.R.S., President, in the Chair.

Dr. A. L. Bennett, Mission Protestante, Libreville, French Congo; Mr. J. G. McH. Gordon and Mr. R. S. G. McH. Gordon, of Corsemalzie, Whauphill, Wigtonshire; Mr. J. A. Kershaw, of Morton Banks, Lewisham Road, Windsor, Melbourne, Victoria; Mr. A. G. Lethbridge, of Glynde Place, Lewes; Mr. W. J. Lucas, B.A., of Minerva Road, Kingston-on-Thames; Mr. R. H. Relton, c/o Perkins and Co., Ltd., Brisbane, Queensland, and Dr. A. J. Turner, of Wickham Terrace, Brisbane, Queensland; were elected Fellows of the Society.

Mr. Tutt showed, for Mr. Herbert Williams, a series of specimens of *Pararge Egeria* bred from eggs laid in July. A portion of the brood were forced, and the imagos, which emerged in November and December of the same year, showed marked darkening of the hind-margin of the under-side of the hind-wings, and were of a greyer colour than those which appeared at the normal time. He also exhibited a batch of fifty specimens of *Amphidasys betularia* bred from ova deposited by a female captured in Essex. The progeny ranged from a colour rather lighter than the normal form to a blackish tint almost equal to that of var. *Double-dayaria*; all intergrades were represented without sign of discontinuity. Mr. H. J. Elwes gave an account of a journey undertaken by him in June and July of the present year to the Russian portion of the Altai mountains, partly for sport and partly to investigate the distribution of insects in that region, and the line of demarcation between the Eastern and Western Palearctic subregions. He exhibited examples of 141 species of butterflies taken by himself. Of these many had not been previously recorded from the region, of which the total number of species now stood at 184; his list showed that the Lepidopterous fauna had a more European and Siberian character than had been previously supposed, or than Seeböhm had found to exist in the avifauna. The number of undescribed species taken was small, but several forms were previously known only from remote localities, such as *Melitæa Iduna*, hitherto recorded from the fells of Lapland. Few *Heterocera* were taken, but among them was the third recorded example of *Arctia thulea*, Dalm. Dr. A. G. Butler communicated a paper, "On some new species of African *Pierina* in the collection of the British Museum, with notes on seasonal forms of *Belemois*."—W. F. H. BLANDFORD and F. MERRIFIELD, Hon. Secs.

BUTTERFLIES IN SOUTH AND NORTH NORWAY.

BY T. A. CHAPMAN, M.D., F.E.S.

A wish to see *Erebia Embla* and *E. Disa* alive in their natural habitats led, after many doubts and debates, to our visiting Norway again this summer. Unfortunately, doubts and debates are fruitful of delay, and it was not till June 20th that I found a specimen of *E. Embla* in my net. The condition of this and subsequent specimens showed that we were a week, or perhaps two, later than would have been desirable to the success of our quest.

Our first station was at Saeterstoen, lat. about 60° 12' north, some 60 miles east and a little north of Christiania. Here Mr. Standen, Mr. W. E. Nicholson and myself were accommodated by Mr. and Mrs. Wattne in their farmhouse of Maarud, and found their kindness and attention to our comforts worthy of our fullest acknowledgments. One of our party has already given some account of this first stage of our excursion in the "Entomologist," with a literary grace and artistic feeling to which I can make no pretence, and so absolves me from doing more than relate drily a few of my own observations.

Saeterstoen is on the banks of the great river Glommen, and the country around has no high mountains, only a few low hills, and as we did not visit these, except in one or two instances, the district was for us one of river valley and flat moorland, in some small degree under cultivation, but chiefly in fir forest and bog. There were all the forms of moorland and bog that I have seen in Norway, except that characteristic of rocky mountainous country—rocks were indeed scarce to Mr. Nicholson's great bryological regret. Open swamp, almost lake, with carices and rushes; similar ground rendered just negotiable by the presence of tussocks; bogs consisting largely of sphagnum and reindeer moss, often rising into small humps and mounds, and covered more or less with möltibär and cranberry (*Rubus chamæmorus* and *Vaccinium oxycoccus*); heathy bogs with heather, bilberries, whortleberries; *Andromeda*, *Empetrum*, and *Arctostaphylos*, and various mixtures and combinations of these. Except in the absolute marsh, each of these forms of moor was varied by being open or by having admixtures of forest, sometimes a genuine forest growth of fir (spruce), sometimes scrubby pines, or birches of larger or smaller size, or various combinations of these. In shaded places *Vaccinium*, especially *uliginosum*, formed a tall undergrowth. I was somewhat surprised at the extremely wet marshy ground, sometimes nearly impassable, in which the spruce fir grew luxuriantly; since in other

places the trees were evidently waging an unequal struggle against the wetness of the ground, I concluded that sometimes at least these areas must be comparatively dry. In a dry summer—we were told the previous summer had been very dry—no doubt many of these bogs became fairly dry; our experience, however, was that all bog and moorland of every kind were very wet, and often required some caution in traversing them. It was our misfortune throughout the excursion to have dull and even wet weather, so that even for several days together not a butterfly was seen, and those we took were few in number and wasted by weather, and even more perhaps by our being too late for them.

Erebia Embla was widely distributed over this district, and occurred wherever spruce fir grew in somewhat wet and marshy places, preferring apparently places where the fir was somewhat sparse and illgrown, but seemed to be absent from open marsh and bog or where spruce was entirely wanting and only pine or birch grew, however similar the ground might otherwise be. Though not a rapid flier, unless disturbed, the nature of the ground often made it appear to be so, travelling by man being slow and requiring considerable circumspection. It was fond of sunning itself on some of the dead branches or twigs of fir with which the ground was often covered, and would at times settle on the tree trunks after the manner of *Chionobas Jutta*. I was not lucky enough to observe one ovipositing. It occasionally appeared to descend from the higher portions of the fir trees and sometimes disappeared thither, so that no doubt it has a habit of resting high up in the trees after the manner of *Euryale* and sundry other *Erebia*.

Chionobas Jutta it was very pleasing to find common in the same habitats as *E. Embla*. Its range was, however, more extensive, as it frequented the open moors and the birch scrub, and was also more at home apparently amongst pine than even among the spruce. It would often rest on the ground, but its favourite station, at least in fair weather, was the sunny side of the tree trunks—fir, pine, or even birch, where it would close its wings and lay itself down sideways as flatly as possible on the bark, after the manner of *Semele* and other Satyrids, sidling along to the protection of a projecting piece of bark if the sun became overcast, and often taking shelter in the upper branches. It was very difficult to see when sitting perfectly still on the trunks on a dull day, its tints and markings corresponding so closely to those of the weathered and lichen-covered bark. The males, and rarely the females, had a curious habit of flying to the foot of a

tree, and then flying upwards in a somewhat zigzag manner, as if carefully scanning the bark all the way up, rising gradually to the upper part of the trunk at a height of 20 or 30 feet, then dropping to the foot of the next tree and repeating the process, exactly the proceeding of the little creeper (*Certhia*), except that *Jutta* flies upwards, whereas the bird creeps. I quite recognise that I may have made some error of observation in supposing the female also to do this; if I have, then the explanation of so odd a habit may be that the males are searching for the females at rest on the tree trunks.

On several occasions I saw *Jutta* ♀ laying her eggs; or rather, to be accurate, I saw each female laying only one egg. She flies some little distance between each act of oviposition, does so quickly and strongly, and is not therefore easily followed amongst birch and fir scrub or through bog, so that though one may see her apparently laying two eggs, the attempt to verify both is always a failure; if you look for the first the butterfly is too far off to see where she lays the second, if you go for the second you must do so without taking time to note exactly where the first is, and so fail to find it on return. At each place only one egg is laid. On one occasion a butterfly settled amongst some grass in the bog and appeared to lay an egg, but I failed to find it. In every other instance, and in each of those in which I found an egg, it was laid on a dead twig of pine or fir several feet from the ground, once indeed not on the actual twig but on the grey-beard moss, which was common on many of the trees.

Though *Jutta* and *Embla* were no doubt on the wing early in June, *Colias Palæno* was first seen about the 25th, and was then scarce and in very fine condition; a week later it was more numerous, and frequented any somewhat open bog, but as a wandering insect of strong flight, it no doubt was often seen at some distance from its proper habitat.

One shadowy specimen of *Argynnis Freija* was seen, *Argynnis Selene*, *Euphrosyne*, and *Aphirape* var. *Ossianus* were found everywhere, yet in places only odd stragglers occurred, whilst in others one or other species was more abundant. In one spot where *Aphirape* was not scarce, the other species were only represented by odd stragglers; in others *Selene* was the more abundant; whilst towards more cultivated ground *Euphrosyne* predominated. *Euphrosyne* presented a considerable proportion of rather dark forms, the greater proportion of the *Selene* were not very different from British examples.

Cænonympha Typhon was rare, the sort of grassy bog it prefers not being the most frequent, nor when met with, owing to its swampy character due to the wet weather, very often investigated.

In one portion of the "great moor," a wide moss free from trees, *Syrichthus centaureæ* was fairly common.

The remaining butterflies met with at Saeterstoen, except perhaps *Lycæna Optilete*, were not by any means suggestive of a northern fauna.

Aporia cratægi was not scarce, yet, except bird-cherry, there was no wild plant observed suitable for its food, hawthorn and blackthorn were absent, and apples in gardens were few and far between.

Pieris napi was common, but *rapæ* and *brassicæ* were conspicuously absent. The absence of *brassicæ* and *rapæ* illustrates what one is so familiar with, that it almost escapes recognition, that those species are dependant on man not only for their present distribution but also for their actual food-plant, whilst *napi* seems to be able to maintain itself on wild *Cruciferae* to a much greater extent, and is probably really native in most of its habitats. *Brassicæ* is certainly feral if not wild, if I may so express it, in many alpine habitats, but I do not think I know of any station for *rapæ* that is certainly independent of human assistance.

The following butterflies were taken at Saeterstoen between June 20th and July 2nd:—*Papilio Machaon*, *Aporia cratægi*, *P. napi*, *Gonepteryx rhamni*, *Colias Palæno*, *Euchloë cardamines*, *Leucophasia sinapis*, *Vanessa Antiopa*, *urticæ*, *c-album*, *Argynnis Selene*, *Euphrosyne*, *Aphirape*, *Freija*, *Melitæa Athalia*, *Erebia Embla*, *Chionobas Jutta*, *Satyrus Hiera*, *Cænonympha Typhon*, *Pamphilus*, *Polyommatus Phlæas*, *Hippothoë*, *Amphidamas*, *Lycæna Argiolus*, *Icarus*, *semiargus*, *Ægon*, *Optilete*, *Cyllarus*, *Amanda*, *Thanaos Tages*, *Syrichthus centaureæ*, *malvæ*, *Pamphila sylvanus* and *comma*.

In proceeding northwards to Bossekop, I left behind Messrs. Nicholson and Standen, and at Trondhjem joined Mr. R. W. Lloyd. On the way north we called for an hour at Torghatten (July 7th), where we saw *Colias Palæno* and *Lycæna Icarus* and *Ægon*, as well as *Zygæna filipendulæ*; and at Harstad (July 8th), where we saw *Argynnis Pales*, *Erebia lappona*, and *Lycæna minima*, but butterflies were scarce, though such moths as *Coremia munitata*, *montanata*, and *Emmelesia albulata* were very abundant. At Hammerfest various Geometers and other moths were abundant, but no butterflies. Mr. F. Walker took an *Erebia* (probably *Ligea*) here in 1837, and Dr. Staudinger found *P. Phlæas*.

From Hammerfest a sail of nine or ten hours for some sixty or seventy miles southwards in the Altenfiord, brought us to Bossekop (July 10th), where we found that insect life was as forward at 69° 50' N., or thereabouts, as at Saeterstoen, 60° 12'; we had the further misfortune to be attended by the same dull, sunless, and at

times wet weather that we had experienced in the south. Bossekop is classic ground for the Naturalist and Entomologist, and has been well examined, though it is not much known to the British Lepidopterist, except through Dr. Staudinger's visit there in 1860 (*cf.* Entomologists' Annual, 1864, pp. 4—27). We learned at Bossekop that some German Entomologists had paid it a visit some few years ago, but could hear of no visits by English Entomologists. We met no one who remembered either Mr. Walker's or Dr. Staudinger's visits.

We found satisfactory quarters at the Inn, for Bossekop possesses an Inn, and met there with a party of Swedish botanists, who successfully verified the habitats of certain plants occurring nowhere else in Europe, though met with also in Labrador.

Our first hunt was after *Erebia Disa*; we duly found it, but it was practically over, the few found were worn to rags, and were largely females that had laid all their eggs. The middle of June would probably be none too soon to find it in good order. We found it over a large area, in fact wherever the möltibär (*Rubus chamæmorus*) bog occurred amongst the pine trees: where the pine wood was drier, or on treeless bogs, it did not occur. However, our experience was so small and belated a one, that our observations may easily prove to be defective. It was in very similar localities to those in which *Embla* occurred at Saeterstoen, reading pine for fir, there being only pine and no fir in any part of the Alten district we visited; on the wing it was very similar in appearance.

A butterfly which had not been out very long on our arrival, and which we found to be still in fair condition, was *Erebia polaris*, a local form of *E. Medusa*. It would be difficult to say where this species did not occur, odd specimens appearing in the most unlikely places, but it was certainly most frequent in some of the enclosed meadows not far from the sea, where the grass was put up for hay, or, if pasture, not eaten too closely. It presented considerable variety in the extent of the development of the eye-spots, some specimens approaching typical *Medusa*, others being nearly free from markings.

Erebia lappona also occurred, but only in single specimens at considerable intervals of time and place.

Erebia Ligea was not met with at Bossekop, but at Kaafjord (a dozen miles off) it put in an appearance about July 19th, a specimen being brought us thence by one of the botanical party, and we took it there on the 21st; it was obviously common, but the weather precluded our seeing it for more than a limited number of minutes. I may note here that we did not see it at Harstad on July 8th, where

it occurred in 1896 at the end of July. At Bodö, on July 25th, it was rather *passée*, and very much so at Tromsö on the 24th, where it was very abundant; but at Trondhjem, though so much further south, it was only just emerging on the 27th, only three, but perfectly fresh specimens, being taken, these appeared during a solitary gleam of sunshine lasting only a few minutes.

This species then certainly emerged earlier in the north, at Tromsö, than in the more southerly latitude (by several hundred miles) of Trondhjem. Sexual dimorphism is much less marked in these Norwegian *Ligea* than in central European varieties, and in those from Kaafjord is reduced to evanescence. A large proportion of the specimens from this locality are very small, as small or smaller than *Euryale*, var. *ocellaris*, but are still *Ligea*, with no tendency to resemble *ocellaris*.

Taken altogether, the most common butterfly at Bossekop, the only one perhaps that could be called common, was *Lycæna Optilete*; this seemed to be still emerging on our arrival about July 10th, and whenever the weather was suitable, was abundant on the moors amongst *Vaccinium uliginosum*, which I suppose to be its food-plant; *L. Argus* was not uncommon in suitable localities, but was not seen, probably not emerged, on our first arrival. A few specimens of *L. Icarus* were also seen.

Colias Hecla was very local, on flats by the river and a few other places, one being taken at Kaafjord, in the village, at a distance from any place resembling our ideas of its proper habitat as gathered at Bossekop; unfortunately, the weather was not favourable to our seeing many specimens, and those we met with were worn, usually extremely so.

Pieris napi, var. *bryoniæ*, was not very rare, but was much worn, the form was a very fine dark one, many of the males even having the veins widely black.

Several specimens of *Vanessa Antiopa* and *urticæ* were seen, and the larvæ of the latter were abundant at Kaafjord.

With the *Argynnes* we were very unlucky: *Selene* was common, usually worn, extremely variable from something near the type to small dark specimens, some of which were clearly referable to var. *Hela*.

Euphrosyne, *Frigga*, and *Aphirape* were represented by single worn specimens, and *Freija* by three ghosts. Though we visited what I take to have been the locality recorded by Staudinger for *Chariclea*

at the right date we saw nothing of it, the weather was probably to blame, as *Ch. Norna*, which occurs close by, hardly put in an appearance.

A. Pales was widely distributed, and in a few places abundant. It varied a good deal in intensity of markings, and in tone of colour, some being almost referable to *Arsilache*, one very small and nearly colourless specimen was taken.

Chionobas Norna flew on broken slopes of the Skaadavara (a hill bounding the mouth of the Alten valley to the west), and one was seen on the flat near the river. Its habits of flight, resting on rocks, as well as its habitat, were all very similar to those of *Aëlla*.

Colias Palæno occurred everywhere, and with fine weather a grand series might no doubt have been taken. There was considerable range in the intensity of colour in the males, and hardly two specimens were alike in the extent and outline of the dark margin, and the degree in which it was suffused with yellow scales; in some of the ♀s it was nearly obsolete, whilst the yellow tint differed little between Bossekop and Saeterstoen specimens, the black border was markedly broader in the specimens from Saeterstoen.

Polyommatus Hippothoë (var. *Stieberi*?) was not infrequent, and in some places, especially near the shore at Bossekop, where the fruit of *Rumex acetosella* tinted the ground, *P. Phlæas* was abundant. *Phlæas* varied much in size, and also in the size of the dark markings, the spots being confluent in one or two specimens, the under-sides were of a much cooler greyer tone than in the English form.

Pamphila comma was abundant on the lower ground in many places. The spots beneath were opaque-white, and the ground colour a dark green, much irrorated with black scales, these in many specimens formed a black margin to the white spots, throwing them up into fine relief, especially in some specimens where the spots were very large, and nearly confluent into a continuous band.

Our total list of butterflies taken at Bossekop included only twenty-two species:—*Pieris napi*, var. *bryoniæ*, *Colias Palæno*, *Hecla*, *Argynnis Aphirape*, *Selene*, *Euphrosyne*, *Freija*, *Frigga*, *Pales*, *Vanessa Antiopa*, *urticæ*, *Erebia ligea*, *lappona*, *Disa*, *Medusa*, var. *polaris*, *Chionobas Norna*, *Polyommatus Hippothoë*, *Phlæas*, *Lycana Optilete*, *Argus*, *Icarus*, *Pamphila comma*.

In some species there is much greater variation, or, perhaps I should say, much more frequent variation than in British examples. *Argynnis Euphrosyne* and *Selene* exemplified this especially, and perhaps impressed the fact somewhat unduly on our attention. *Euphrosyne* at Saeterstoen varied from a pale, nearly English form, to

what we should call fine dark varieties, without, however, anything extreme; *Selene* was especially dark and small at Bossekop, but what I note here is that there was much less uniformity of colour and markings than there would be amongst a similar number of English specimens. *E. Embla* and *polaris* varied in extent of ocellation after the manner of *Erebias*, on the whole, I think, rather more than most species do in any one locality. As to the *Erebias*, an examination of the appendages of a considerable number of *Disa* and *Embla* shows the distinctions noted by me to be very constant, and the eggs are abundantly distinct. *Medusa*, var. *polaris*, did not present one example of "Asiatic" neurulation that is so frequent in the mid-European forms.

Besides the immediate vicinity of Bossekop, we found time for only flying visits to neighbouring localities. We spent a night at a farmhouse (Tongen) at the foot of the Reipasvara, where the Ejby-elv joins the Alten-elv. The chief outcome of this excursion was a good wetting on the Reipasvara, a mountain with a wide moorland top that promised good things had the weather allowed; nor shall we soon forget the state of high spate in which we found the Ejby-elv, and how our guide succeeded in precipitating therein all our belongings, luckily a mere light skirmishing outfit; and I must not fail to record the heroic efforts of my companion by which they were retrieved, incidentally rescuing our guide from a position of no little danger. On a later date, the river having risen still higher, and swamped the approaches to the temporary footbridge, we had to resort to primitive, if not picturesque, expedients to effect a crossing. Several moths occurred here that were not seen near Bossekop. *C. Hecla* inhabited flats by the Ejby-elv, and a *Chionobas* was seen that was more likely *Bore* than *Norna*, but it was not captured.

We also visited Kaafjord, where we stayed a night at the house of Herr O. Kjeldsberg, in quarters much more luxurious than we expected to meet with so far within the Arctic Circle. Kaafjord is properly a short narrow arm of the Altenfjord, some ten or twelve miles to the west of Bossekop, but the name is usually applied to the village and mines on its shores. The character of the country here is considerably different from that at Bossekop, the hills are closer, the valleys narrower, whilst at Bossekop the great open valley, anciently the estuary of the Alten river, is the dominating characteristic.

At Kaafjord we found *C. Hecla*, *E. ligea*, also such moths as *Setina irrorella*, *Arctia fuliginosa*, *Eupithecia venosata*, *Sphegia culici-*

formis, and others, suggesting greater shelter and warmth than at Bossekop. Probably these also occur at Bossekop, but were not abundant enough to come under our notice.

We did not make so complete observations as we could have wished on the effect of continuous daylight on the times of flight of different insects. As regards the butterflies, the weather was too dull to give us reasonable opportunity to come to any definite conclusion; but a bright warm morning at Bossekop induced the butterflies in the immediate vicinity to fly as early as 8 a.m., and to fly freely by 9 a.m.; these were: *Erebia Medusa*, *Polyommatus Phlæas*, *Argynnis Pales*, *Pamphila comma*, *Lycæna Optilete*; on the other hand, a day dull and overcast till 4 or 5 p.m., and then brilliantly fine, did not result in many butterflies being then seen on the wing. Amongst moths different species had their special times of flight. *Melanippe hastata* was on the wing at all hours. *Pachnobia hyperborea* often flew at 4 or 5 in the afternoon, and at the same time *Cidaria abrasaria* flew freely; but it was not till 7 or 8 p.m. that most species of moths began to fly. We did not sugar or go mothing at "midnight," as we ought to have done, to the considerable increase of our list of species, but we concluded that the hours of flight of different species, both of butterflies and moths, varied very little from those natural to them in the south, notwithstanding the continuous day.

Betula, Reigate:

October, 1898.

TRICHOPTERA, PLANIPENNIA, AND PSEUDO-NEUROPTERA,
COLLECTED IN FINMARK

IN 1898 BY DR. T. A. CHAPMAN AND MR. R. W. LLOYD.

BY ROBERT McLACHLAN, F.R.S., &c.

The graphic description of his journey already given by Dr. Chapman (*cf. ante* pp. 20—28), is sufficient general introduction to this short article. The results obtained were so interesting as to make it a matter of regret that a trained Neuropterist was not of the party. Where no locality is given the specimens were from Bossekop (lat. 69° 50' N.). A few are indicated from Hammerfest (lat. 70° 40' N.), taken by Mr. Lloyd.

I have also mentioned the species taken by Dr. Chapman at Saeterstoen (South Norway, lat. 60° 12' N.). All were kindly presented to me.

TRICHOPTERA.

PHRYGANEA OBSOLETA, McLach., 1 ♀ at Hammerfest.

LIMNOPHILUS RHOMBICUS, L., 1 ♂.

LIMNOPHILUS SCALENUS, Wallengr., 10 ♂, 9 ♀. My original description, made from Wallengren's typical examples from the Dovre Alps (*cf.* Rev. and Synops., Suppl., p. xxii), gives no good idea of the anterior wings as exemplified in this long series from Finmark. There is nearly always a large pale anastomosal space, and a distinct fenestrate spot, and there is also usually a blackish spot at the pterostigma, frequently broken in two and enclosing a whitish spot; in fact, the affinity to its very near ally *L. bipunctatus* is brought prominently forward, even in wing markings. The ♀ is structurally much like *L. bipunctatus*. I have seen undoubted specimens of *L. bipunctatus* from Finland of equally small size, and some of the examples of the latter from the little alpine Lac de Gers in Savoy (*cf.* Rev. and Synops., Suppl., p. xxi) deceptively resemble these exponents of *L. scalenus*. Dr. Chapman observed the final metamorphosis of this species, which he describes in the following note:—

"On a little tarn high up (perhaps 1200 feet) on the Skaadavara, we one day noticed a Trichopteron emerging from the pupa in considerable numbers. The pupæ were seen swimming on the surface of the water with some rapidity, and when they reached a stone or a plant, climbed up and at once changed, the emergence and the simultaneous expansion of the wings being very rapid. They were all evidently in a hurry, yet could submit to a certain amount of delay if not allowed to land; nevertheless, there was a limit to this, and a good many were seen that had emerged on the surface, and were floating, waiting for their wings to harden, on the empty pupa shells; the wing-hardening took place rapidly, the wings being useful for flight in a very few minutes."

It will be remembered that Eaton observed the pupæ of the alpine form of *L. bipunctatus* at the Lac de Gers; the habits of the two are evidently very similar.

ASYNARCHUS sp.?, 1 ♀ of the typical group, scarcely to be determined without the ♂.

ASYNARCHUS PRODUCTUS, Morton, 2 ♂, 1 ♀. This species was described recently from examples taken by Dr. J. Sahlberg at Mandojärvi in Finnish Lapland (*cf.* Medd. Soc. Faun. et Flora Fennica, xxi, p. 109, 1895). The examples from Bossekop are slightly smaller. The undescribed ♀ is generally similar to the ♂. The 9th dorsal segment is not unusually produced. The tubular piece, viewed laterally, forms two very prominent broadly triangular obtuse valves, deeply divided above and below, and enclosing a nearly circular opening.

ASYNARCHUS CÆNOSUS, Curt., 1 ♂ larger than the British form.

STENOPHYLAX NIGRICOENIS, Pict., 4 ♂. Also 2 ♂ and ♀ from Hammerfest. It was taken by Mr. F. Walker in 1837, probably at the latter locality.

STENOPHYLAX STELLATUS, Curt., Hammerfest, 3 ♂, 2 ♀.

APATANIA STIGMATELLA, Zett., many examples. It was taken by Mr. Walker at Alten.

The following were taken by Dr. Chapman at Sæterstoen (South Norway):—*Phryganea obsoleta*, McLach., 2 ♂. *Stenophylax nigricornis*, Pict., 1 ♂. *Apatania stigmatella*, Zett. (?), 1 ♀.

PLANIPENNIA.

HEMEROBUS NERVOSUS, F., 1 ♂. I think this is very probably *H. betulinus*, Ström, and if so, his name would have priority.

HEMEROBIUS sp., 1 ♂ 1 ♀ of an apparently undescribed species allied to *nervosus* and *subnebulosus*, which occurs also in Scotland and in the Alps of Central Europe.

PSEUDO-NEUROPTERA.

PERLIDÆ.

DICTYOPTERYX COMPACTA, McLach. (?), 1 ♀. The identification is very probable.

The species was originally described from Eastern Siberia.

NEMOURA VARIEGATA, Oliv., and another species not identified with certainty.

EPHEMERIDÆ.

The few examples have been examined by Mr. Eaton, who reports as follows:—
BARTIS VERNUS, Curt., 1 ♂ imago. The species has been already recorded from Hammerfest and Alten, taken by Mr. F. Walker.

CHIROTONETES sp., 1 ♂ subimago and 1 ♀ imago. These captures form an interesting feature in the distribution of the genus, and may probably form the subject of a separate communication.

At Saeterstoen (South Norway) Dr. Chapman took 1 ♀ imago and 1 ♀ subimago of an undetermined species of *Siphilurus*.

ODONATA.

SOMATOCHLORA ARCTICA, Zett., 1 ♂. S. ALPESTRIS, Selys, 4 ♂, 4 ♀.

ÆSCHNA JUNCEA, L., 1 ♀.* Æ. CÆRULEA, Ström (*borealis*, Zett.), 3 ♂, 6 ♀, also 1 ♂ from Hammerfest.

At Saeterstoen (South Norway) Dr. Chapman collected the following:—*Leucorrhinia rubicunda*, L., 1 ♂, 2 ♀. *L. dubia*, V. d. L., 4 ♂, 1 ♀. *Somatochlora metallica*, V. d. L., 2 ♂, 1 ♀. *Agrion puella*, L., 1 ♂. *A. hastulatum*, Charp., 1 ♂. *Lestes Dryas*, Kby. (*nympha*, Selys), 1 ♂.

Lewisham, London:

January, 1899.

BRITISH DIPTERA UNRECORDED OR UNDESCRIBED BY ENGLISH AUTHORS.

BY R. H. MEADE, F.R.C.S.

Having found a good many indigenous *Diptera* during the last few years, chiefly belonging to the tribe of *Muscidæ*, which have not been described by Walker or any other British author; I think that a short diagnostic description in English of each species will be of more interest to those who are taking up the study of this neglected Order than a mere enumeration of names.

* Wallengren says that *juncea* does not occur in Lappmark. I think there can be little doubt of the identity of the specimen I have referred to that species.—R. McL.

DOLICHOPUS AGILIS, Mgn.

This species is very similar to *D. linearis*, Mg.; the chief points of distinction being, that in the former the fore coxæ are armed with a number of black bristles, and the hind tibiæ have the extremity a little thickened, as well as black; the fore tarsi are also darker in colour. The antennæ have the basal joints yellow, and the third black, oval, and pointed; the hypopygium is black, with pale yellow and slightly black fringed lamellæ. The legs are pale yellow, with exception of the blackened and slightly thickened ends of the hind tibiæ, black hind tarsi, the fore tarsi with the last four joints piceous or black, and the metatarsus pale. I captured a specimen of both sexes of this fly in my garden near Bradford in 1886, and also a single male at Windermere in 1892. This is not in Mr. Verrall's late lists, but he remarked in the Ent. Mo. Mag. for July, 1875 (when speaking of a former list of the *Dolichopodidæ*), "this species appears in the list simply from a female caught at Leith Hill on June 25th, 1863, which was marked by Loew as *agilis*? I fear it is incorrect."

HYLEMYIA GRISEA, Fln.

Mr. Beaumont sent me a specimen of this well marked species (frequenting the nests of *Hymenoptera*) which he had captured at Oxshott, in Surrey. It is narrow, conical, and pale ash-grey in colour, about 8 mm. long, with a long haired arista; a very prominent forehead and face (buccate), and sub-approximate male eyes. The thorax has three sub-distinct dark stripes. The abdomen is sub-cylindrical, with a faint, dorsal, central, black stripe. The palpi, antennæ, and legs are black. The wings have a yellow tinge.

PEGOMYIA PALLICEPS, Ztt.

This little fly has the antennæ and palpi black; the arista pubescent at the base, the thorax dark grey and unstriped, the abdomen conical, pointed, pale grey, and immaculate; calyptæ with scales small and equal; wings yellowish; legs yellow, with the exception of the fore femora and all the tarsi, which are black. The hind tibiæ have a single long bristle in the middle of the outer surface. Mr. Beaumont sent me a single female which he captured at Taynult, in Argyllshire.

CORDYLURA RUFIMANA, Mgn.

This has the tibiæ and tarsi of the fore-legs red, but all the other parts of the legs black. The palpi and antennæ are black, the thorax and abdomen shining black, the former with a short, white central stripe or spot in front. I have two specimens of this species, which I found in a collection made by the late Francis Walker.

NORELLIA NERVOSA, Mgn.

The antennæ, palpi, and proboscis in this species are yellow; the arista sub-plumose; the thorax and abdomen dark greyish-black, with yellow pubescence, the former being marked with two sub-distinct stripes; the legs are yellow, with a dark mark at the apex of the hind femur, and the fore femora are armed beneath with long bristles; the wings have the long veins slightly nebulous near the apices.* I found this rare species near Bradford on June 14th, 1884. Mr. Verrall has not included this in his list, but it is mentioned as British by Curtis, and also by Walker in his list of undescribed species.

* This species may be known from *N. flavicauda*, Mgn., which it closely resembles, by the shoulder points and scutal being black instead of yellow.

CLEIGASTRA NIGRITA, Flin.

This is a little shining black species, with black antennæ and palpi. The legs are also black, with yellow tibiæ, and piceous tarsi. Length, 3—4 mm.

This fly was captured and sent to me by Miss Prescott-Decie; the locality was not noted.

CLEIGASTRA TIBIELLA, Ztt.

This species bears a considerable resemblance to *C. nigrata*, but is of a dull brown-black colour, instead of being bright and shining; the palpi also are yellow, and not black; the thorax, as well as the abdomen, is immaculate, the latter in the male is very narrow; the legs have the femora black, and the tibiæ and tarsi testaceous. I captured one male some years ago, I think in the Lake district.

HYDROMYZA FRATERNA, Mgn.

This has the frontal space yellow, with the lateral bristles prolonged to the base of the antennæ, which are black, with a yellow mark across the middle on the base of the third joint; the arista is bare and thickened at the base; the palpi are pale, with dilated extremities; the thorax and abdomen are yellow-grey, the former being marked with two wide, rather faint, brown stripes; the legs are yellow, with somewhat grey femora. I found a single female at Windermere in 1884.

SCATOPHAGA FONTANALIS, Rnd.

This little species may be distinguished by its having the palpi, as well as the legs, black; it is dark grey in colour, and the thorax has three rather indistinct stripes. The antennæ are black; the arista is long and slightly pubescent; the frontal space red in front; the epistome slightly projecting; the wings clear and slightly flavescent. I found a female (Rondani did not know the male) of this fly at Windermere in 1892.

SCATOPHAGA VILLIPES, Ztt.

This is very similar to *S. litorea*, Flin., but is rather larger, and much more hairy; the antennæ also have the basal joints red; the thorax is dark grey, and less distinctly marked than in *S. litorea*, and the male has the anal joints of the abdomen incurved and red.

I found this fly at Silverdale (Lancashire) in April, 1875, and also received a specimen from Mr. Beaumont, taken at Tynnuilt (Argyllshire).

SCATOPHAGA HETEROMYZINA, Ztt.

I captured this species at Windermere, in July, 1892. It has the antennæ with the basal joints yellow; the arista bare; the palpi yellow; the proboscis piceous; the thorax dark grey, indistinctly striped; the abdomen yellow, and darkened towards the apex; the wings clear; the legs pale, with few bristles, and the tarsi piceous. Length, 4 mm.

FUCELLIA MUSCARIA, Ztt.

This has the thorax yellowish-grey, with indistinct stripes. The scutellum is pale grey; the abdomen is dull grey, narrow, or rather pale in the male; oval and darker in the female, and marked with transverse black marks; the head has the

frontal space red in front and black behind; the antennæ with basal joints yellow, and the third black; arista bare; palpi black, with the tips a little dilated and pale; legs black, wings grey. This bears a considerable resemblance to the common *F. fucorum*, but is paler in colour, less distinctly striped, and has the basal joints of the antennæ yellow.

I have a pair of these flies, which were given to me by the late Mr. Cooke, of Bowdon.

(To be continued).

ARISTOTELIA UNICOLORELLA, DP., IDENTIFIED AS A BRITISH SPECIES.

[n. synn. *Lita unicolorella*, Dp., = *Anacamptis unicolorella*, H.-S., = *Gelechia immaculatella*, Dgl.]

BY EUSTACE R. BANKES, M.A., F.E.S.

In Lép. de France, Sppl., iv, 458, Pl. 85, fig. 8 (1842), Duponchel described and figured a Gelechiad under the name *Lita unicolorella*, which some continental authors, including Wocke, have regarded as probably identical with what we know as *Aristotelia tenebrella*, Hb.; these have attributed the name *unicorella*, where used for an allied species distinct from *tenebrella*, either to Zeller, who only used it in MS., or to Herrich-Schäffer. Mr. J. H. Durrant, however, informs me that the late Monsieur E. L. Ragonot, who made a special study of Duponchel's collection, made the following notes (probably on the evidence of the type itself) in his copy of Staudinger's Catalog:— (1) under *Monochroa tenebrella*, Hb., "dele ' ? *unicorella*, Dp., iv, 85, 8," and (2) under *Lamprotes unicolorella*, H.-S., it is indicated that "Dp., iv, 85, 8" should precede the reference to Herrich-Schäffer. Moreover, an examination of the original drawing for Duponchel's work (now in the Merton library) strongly confirms Ragonot's identification of *unicorella*, Dp., with *unicorella*, H.-S. Zeller, who originated the name, employed it in MS. for the same species, and it is worthy of notice that Duponchel, Cat. Méth. Lp. Eur., 342 (1846), writing under the title *Butalis unicolorella*, gives Germany as the only known locality for it.

Gelechia immaculatella was first described by Douglas in Trans. Ent. Soc. Lond., N. S., i, 67 (1850), from a single specimen taken by himself in West Wickham Wood in August, 1849. Stainton then described it from the selfsame individual in Ins. Brit. Lep. Tin., pp.

132—3 (1854), and gave a shorter description in the *Manual*, ii, 343 (1859), agreeing with his previous one. Thanks to Mr. P. B. Mason's kindness, I have examined in the Douglas collection the original type specimen of *immaculatella*, which bears on its pin a printed ticket "74," the meaning of which is unknown to me, and another ticket which reads "1484," and is explained by Mr. Douglas' diary to mean that he took the moth in West Wickham Wood on August 11th, 1849. The type is without doubt an undersized male specimen (*alar. exp.* 10·5 mm.) of *Aristotelia unicolorella*, and agrees with this species in every respect. To my eye, it is neither "blue-black," as stated by Douglas, nor "fuscous-black," as affirmed by Stainton, but somewhat pale, shining bronzy, greyish-fuscous. Douglas was right in saying (*l. c.*) that there are no spots on the fore-wings, and Stainton, who describes them as each having two dark spots, was misled by an appearance of spots which is merely due to folds in the wings.

In after years Stainton determined a few obscure specimens as *immaculatella*, and returned others as probably referable to this species, but none of either class that I have seen, which include the individual bred by Threlfall from among roots of sea-plantain (*Ent. Mo. Mag.*, xv, 89), and one in the Stainton continental collection, bred by Frey from *Lotus corniculatus* in May, 1857, and labelled by Stainton as "*Immaculatella*, Dgl.," are conspecific with Douglas' type. Meyrick, *HB. Br. Lep.*, 582 (1895), enters *immaculatella*, Dgl., as perhaps identical with *anthyllidella*, Hb., but the correct synonymy, as worked out by Mr. Durrant and myself, so as to include all the more important references, will be as follows:—

ARISTOTELIA UNICOLORELLA, Dp.

n. synn. = *unicorella*, H.-S., = *immaculatella*, Dgl.

- Lita unicolorella* [Z. MS.], Dp., *H. N. Léop. France*, Sppl. iv, 458–9, Pl. 85, 8 (1842).¹
 = *Butalis unicolorella*, Dp., *Cat. Méth. Léop. Eur.*, 342 (1846).²
 = *Gelechia tenebrella*, Dgl., *Tr. Ent. Soc. Lond.*, N. S., i, 16, No. 47 (*partim*) (1850);³ *Stn.*, I. B. *Lep. Tin.*, 131, No. 70 (*partim*) (1854);⁴ *Man.* ii, 342 (*partim*) (1859).⁵
 = *Gelechia immaculatella*, Dgl., *Tr. Ent. Soc. Lond.*, N. S., i, 67, No. 78 (1850);⁶ *Stn.*, I. B. *Lep. Tin.*, 132–3, No. 76 (1854);⁷ *Man.* ii, 343 (1859).⁸
 = *Anacamptis unicolorella*, H.-S., *Schm. Eur.*, v, 196, No. 526 (1854).⁹
 = *Gelechia unicolorella*, Frey, *Tin. u. Pter. Schweiz*, 124, No. 49 (1856);¹⁰ *Lep. Schweiz*, 368 (1880).¹¹
 = *Lamprotes unicolorella*, Hein., *Schm. Deutsch. Tin.*, 310, No. 463 (1870);¹² *Stgr.*

and Wk., Cat. Lep. Eur., 298, No. 2063 (1871);¹³ Sorhagen, Kleinschmet. M. Brand., 332 (1886);¹⁴ Dumans, Bull. Soc. Ent. France, 1892, lxxii.¹⁵

= *Anacamptis immaculatella*, Stgr. and Wk., Cat. Lep. Eur., 298, No. 2070 (1871).¹⁶

Imago —v,¹⁴ vi,⁹ 11 14 vii,⁹ 10 14 viii.⁶—8

Hab.: SCOTLAND—Oban (Grfth.). ENGLAND—Abbotts Wood (Flchr.), Dartford Heath (Stn.), Grange, Lancs. (Stn.), Steyning (Flchr.), Tarrington (J. H. Wood), West Wickham.⁶—8 FRANCE—Pont l'Évêque, Calvados.¹⁵ GERMANY²—Glogau,⁹ Göttingen,¹⁰ Hannover,¹⁴ Neustrelitz,⁹ 10 Regensburg,⁹ 10 [? Wiesbaden].¹² AUSTRIA—Nanos,¹⁰ Semmering,⁹ 10 Vienna.⁹ 10 Carniola.¹³ SWITZERLAND—Bergün,¹¹ Bremgarten,¹⁰ 11 Lausanne,¹⁰ 11 Zürich.¹⁰ 11 SPAIN—Castile.¹³

A. unicolorella closely resembles *A. tenebrella*, Hb., but apart from its being rather lighter in colour, not purple-tinged, and as a rule somewhat larger, it may with certainty be distinguished from it by the fact that the terminal joint of the palpi is quite *as long as* the middle joint, whereas in *tenebrella* the terminal joint is invariably *shorter* than the middle one. For this reason, Von Heinemann placed these two species in different genera, *Lamprotes* and *Monochroa*, but the distinction has been held by Meyrick insufficient to justify such separation, and moreover the name "*Lamprotes*" is a homonym. Again, in *unicorella* the antennæ of the female are dark throughout, as in the male, whereas in *tenebrella* they have the apical third white, while the male has them entirely dark. The female of *tenebrella* was, on account of its white-tipped antennæ, described by Zeller (Isis, 1839, p. 201) as distinct under the name *tenebrosella*, and it was not until it had been abundantly proved by breeding from precisely similar larvæ feeding together in roots of *Rumex acetosella*, that their specific identity was generally recognised.

In justice to Mr. W. Warren, I should mention that in 1887 he correctly identified as "*unicorella*, Z.," some specimens taken in Sussex by Mr. W. H. B. Fletcher, but Mr. Stainton, in spite of his note in Ent. Mo. Mag., iii, 78—9 (1866), then told him (*in litt.*) that they represented the species that he considered to be *tenebrella*, as distinct from *tenebrosella*, of which the males were unknown, and his remarks prove that he included under the name "*tenebrella*" both sexes of *unicorella*, Dp., and the males of *tenebrella*, Hb. Stainton's British series of "*Tenebrella*, Hüb.," consists of eleven specimens, all males, of *tenebrella*, Hb., and eight examples, representing both sexes, of *unicorella*, Dp., whilst his set of "*Tenebrella*, F. v. R.," includes both sexes of *tenebrella*, and one specimen of *unicorella*. And although in the Douglas collection *immaculatella*, Dgl., is only

represented by the original type specimen, I found in his series of "*Tenebrella*, Hüb.," other examples of *unicolorella* mixed with those of the true *tenebrella*.

A. unicolorella is very widely distributed in Britain, and I have myself identified specimens of it from Argyll (Oban, *A. F. Griffith*), Lancashire (Grange, *H. T. Stainton*), Herefordshire (Tarrington and district, *J. H. Wood*), Kent (Dartford Heath, *H. T. Stainton*; West Wickham, *J. W. Douglas*), Surrey (Mickleham, *J. W. Douglas*), and Sussex (Abbotts Wood and Steyning, *W. H. B. Fletcher*). Although one moth, erroneously supposed to be *immaculatella*, was bred by Threlfall from among roots of sea-plantain (*Ent. Mo. Mag.*, xv, 89), and another standing in Stainton's continental collection and wrongly identified by him as *immaculatella*, was bred from *Lotus corniculatus*, nothing is yet known about the larva. Mr. Fletcher, who has taken the imago in such very dissimilar spots as the rides of a large wood on stiff clay soil, and the sunny bank inside a chalk-pit in the open, suggests that *Lotus*, or some near ally, may eventually prove to be the food-plant.

I know no reason for supposing that this species is double-brooded. I have included, among the months for the imago, May, because Sorhagen (*l. c.*) includes it, and August, because Douglas took his type-specimen of *immaculatella* then, but all the other captures known to me, whether in Britain or on the continent, have been made in June and July. It therefore seems probable that the May and August specimens are merely precocious and late individuals.

The Rectory, Corfe Castle:

November 8th, 1898.

[*ARISTOTELIA TENEBRELLA*, Hb.

n. syn. = *Butalis buffonella*, Mill. (*teste* Ragonot, MS.).

In the late Monsieur Ragonot's copy of Staudinger's Catalog (which we have been enabled to study through the kindness of Madame Ragonot), the following note occurs under *Monochroa tenebrella*, Hb.:—"=*Butalis buffonella*, Mill. Cat., 361, vu type Cannes."

The synonymy should, therefore, stand thus:—

ARISTOTELIA TENEBRELLA, Hb.

Tinea tenebrella, Hb., Samml. Eur. Schm. Tin., Pl. 65, 434 (c. 1816). *Hypatima tenebrella*, Hb., Verz. bek. Schm., 415, No. 4028 (1826). *Monochroa tenebrella*, Stgr. and Wk. Cat., 298, No. 2061 (1871), &c., = *Butalis buffonella*, Mill., Cat. Lp. Alp. Mar., 361 (1875).

WALSINGHAM, and J. H. DURRANT.]

ON A SPECIAL ACARID CHAMBER FORMED WITHIN THE BASAL
ABDOMINAL SEGMENT OF BEES
OF THE GENUS *KOPTORTHOSOMA* (*XYLOCOPINÆ*).

BY R. C. L. PERKINS, B.A.

The genus *Koptorthosoma* was formed by Gribodo for the reception of certain species previously placed in *Xylocopa*. They differ greatly from the bees of that genus in the structure of the posterior part of the thorax, and the base of the abdomen. The scutellum is abruptly deflexed posteriorly, so that a sharp edge is formed which slightly projects over the post-scutellum. The basal segment of the abdomen is sharply truncate in front, the basal portion being strongly concave, and is very closely applied to the thorax, the edge dividing its dorsal and anterior surfaces, fitting beneath the sharp edge of the scutellum. Owing to the concavity of the parts, a closed cavity is thus formed between the hind part of the thorax and the base of the abdomen. If the basal concavity of the first abdominal segment be examined in the female bee, a distinct orifice will be found in the middle, generally small and overhung with hairs, but in some species large and quite exposed. An examination of the interior of this segment will reveal a large chitinous chamber, transverse, and filling a large part of the interior of the segment in most species, but in some smaller and rounded in form. The form of the chamber would appear to be constant for a particular species of bee.

The orifice above mentioned is the external opening of this chamber. Examples of a species of *Acarus* of unusually large size appear to be always found within the chamber; sometimes they entirely fill up the cavity. In dead examples of the bees an *Acarus* will often be seen with its front parts projecting through the orifice, and its existence was first made known to me in this manner. I have examined the female of seven species of *Koptorthosoma*, viz., *K. latipes*, *K. tenuiscapa*, *K. æstuans*, *K. verticalis*, *K. cærulea*, *K. caffra*, and *K. trepida*.

In the females of all these species the chamber was found, and *Acari* within in. It is noteworthy that the latter two species are from South Africa, the others from India or the Indo-Malay region. The males of the two first-named species have also been examined, as well as a number of undetermined species, but they have no chamber for *Acari*, although the external structure of thorax and abdomen is similar to that of the female. The spot where the orifice of the chamber is situated in the ♀ is in the other sex occupied by a more or

less deep depression, showing on the inside of the segment as a small tubercle, and this may obviously be regarded as an excessively rudimentary condition of the structure found in the female.

Not every species of *Koptorthosoma*, however, possesses the chamber, for Dr. Willey has brought home from New Britain females of a species, very closely allied to *K. æstuans*, which show no more trace of it than do the males of those species above mentioned. In no true *Xylocopa* (either ♂ or ♀), of which many species have been examined, is there any chamber or orifice. The large *Acar*i I have not yet found entirely outside the chamber. Minute examples often abound on the thorax posteriorly, and sometimes may be seen arranged in a regular transverse row at the base of the hairs. These may either be the young of the large individuals, or belong to some other species.

The fact that the chamber is found only in the female bees is of interest and importance, for, as every Hymenopterist is aware, the male bees are short-lived and vagrant, rarely returning to the nest for more than a few days, so that parasites attached to this sex would be placed under very disadvantageous circumstances.

The hind portion of the thorax of Aculeate *Hymenoptera* is always a favourite resting place for parasites, and it is probable that they attack the soft membranes which connect the abdomen and thorax—the only spot apparently that is open to attack. One may sometimes pick up large *Bombi* so weakened by these Acarid parasites as to be quite unable to fly. Sharp has suggested [Ent. Mo. Mag., xv (1878), p. 154] that the accurate co-adaptation of external parts of certain beetles (*Helicopr*is) is for the purpose of excluding parasites from parts liable to be attacked. We have seen a Staphylinid struggle furiously to rid itself of a single minute *Acar*us.

The protection afforded to the parasites by living enclosed is obvious enough, and it would probably be an advantage to the bees to have these large *Acar*i confined in a special chamber. There is, however, no positive evidence that they do keep within it, and from the fact that in dried specimens they are so often found partly emerging from the orifice, the contrary would appear to be the case.

Moreover, it may be observed in some species of the bees that a row of stiff hairs is directed obliquely over the orifice from above, as if to bar the way upwards, while on the lower side it is nearly or altogether unprotected, and a deep groove extends directly from it to the membranes of the abdominal articulation, as if to actually guide the parasites to the weak parts. Around the point of articulation

there may often be seen a dense mass of very minute parasites. So far as one can judge from the examination of the structures it would appear that these are produced entirely to the disadvantage of the bee, seeing that they afford a secure retreat to the parasites, and place them in a most convenient position for attacking what is perhaps the most vulnerable part to be found on the creature they infest. However, as the existence of the chamber and the parasites is well known to Mr. E. E. Green, of Ceylon, and other entomologists, who are in a position to make direct observations on the living insects, it is to be hoped that such observations will shortly be made. I am very much indebted to Dr. Sharp for furnishing me with the species of *Koptorthosoma* enumerated above for examination, and to Dr. Willey for his most interesting specimens from New Britain.

A somewhat similar case known to me is that of a wasp of the genus *Odynerus*, found in Arizona and Mexico. If, in a female example of this wasp, the second segment of the abdomen be pressed downwards so as to expose the basal portion, which, in a natural position, lies beneath the first, it will be seen that this portion is very deeply constricted, and extremely long, projecting far beneath the basal segment. Naturally, the apical margin of the basal segment rests on the front of the non-constricted part of the second, so that an extensive closed cavity is formed, limited in front by the intersegmental membrane of the two segments. This cavity is filled with minute *Acari*, which dispose themselves in the most regular order, so as not to interfere with the movements of the segments. As in the case of the parasites of *Koptorthosoma*, these *Acari* are also placed in a position most favourable for protection, and for access to a soft part, viz., the membrane connecting the first two segments. The male of the wasp has only the narrow constriction at the base of the second segment, as is usual in the genus, and *Acari* were altogether absent in all those examined.

Cambridge: December 14th, 1898.

ORTHOPTERA FOUND AROUND JERUSALEM IN 1893 AND 1896.

BY A. H. SWINTON, F.E.S.

FORFICULARIA.

FORFICULA AURICULARIA, L.—Dr. Festa found this insect at Jerusalem on March 17th, 1893 (Boll. dei Mus. di Zool. Torino, December, 1893).

BLATTODEA.

PERIPLANETA ORIENTALIS, L.—Dr. Festa says that this domestic plague is

found in Syria. I believe I have specimens of this species from Miss Fitzjohn's Institution at Jerusalem that have the elytra more or less curtailed, but which I am unable to distinguish from another received from the same, thought by Mr. Kirby to be an *Ischnoptera*. The Jerusalem cockroach is blacker in colour than the English.

HETEROGAMIA SYRIACA, Sauss.—I found this beneath ass-dung at Jerusalem on May 23rd, and I previously met with it running over the sand-hills at Jaffa.

POLYPHAGA ÆGYPTIACA, L., ♀.—On July 23rd, in the Sook or covered market alley at Jerusalem.

MANTODEA.

EMPUSA EGGENA, Charp.—Two specimens appeared on the bushes in the garden at Jerusalem on June 9th.

AMELES HELDREICHI, Brunn.—I noticed this small raptorial insect, which seems to be abundant in the Holy Land, running over the rocky ridges covered with dry grass to the left of the Jaffa road on leaving Jerusalem.

FISCHERIA BÆTICA, Ramb.—On bushes. Immature form, July 10th; perfect, August 18th.

FISCHERIA, species ?.—July 20th; resembles in colour the dry grass on which it was crawling.

ACRIDIODEA.

PYRGOMORPHA GRYLLOIDES, Latr.—On the Jaffa sand-hills in April, ferrugineous or pink in colour. I found a small male, perhaps of this species, with colourless wings near Jerusalem on June 9th.

OCHRILIDIA PRUINOSA, Brunn.—Found in the adult state at Jerusalem by Dr. Festa, March 17th, and again on the eastern bank of the Dead Sea.

OCHRILIDIA TIBIALIS, Brunn.—Dr. Festa found this species at Jerusalem on March 17th, and he again met with it at Es-Salt.

DURONIA SAVIGNII, Krauss.—Found by Dr. Festa at Jerusalem and Es-Salt.

STAURONOTUS MAROCCANUS, Thunb.—The plague of Cyprus. Dr. Festa noticed a great quantity of the larvæ of this species at Jericho in 1893. On June 11th, 1898, a swarm arrived at Jerusalem, coming from Es-Salt, and covered the ground, when the birds darting about here and there in pursuit presented a spectacle that was watched with some interest by the inhabitants. They departed in the direction of Colonia.

STAURONOTUS GÉNÉI, Ocks.—Immature, July 18th; mature, July 10th to August 25th. Abundant round Jerusalem, and apparently plentiful in the Holy Land and Mediterranean District.

STAURONOTUS HANENSTEINI, Brunn.—Jerusalem, June 12th. Distinguished from the former small species by its black knee caps. It is found in Syria as well as Palestine.

STETHOPHYMA TURCOMANUM, Fisch d. W.—Leaping in the tracks in the scrub on the hills around Jerusalem, June 5th to 21st.

ACROTYLUS INSUBRICUS, Scop., was noticed by Dr. Festa near Jerusalem on March 17th.

PACHYTILUS MIGRATORIUS, L.—The migratory locust has the reputation of coming to Jerusalem; Dr. Festa saw it at Beyrout.

ŒDIPODA GRATIOSA, Serv.—This grasshopper, which I found immature on June 9th, and which continued leaping among the scrub until September, has a reddish earthy orange tint on the thorax, and at the base of the elytra that favours its concealment on the red Adamic soil of Palestine.

COSMORRHYSSA FASCIATA, Thunb.—I found this, immature, on June 9th, and it was to be seen here and there, as on the road to Bethlehem, until the middle of August; perhaps it is a little later in its appearance than the former species. When it flies it is rendered conspicuous by its canary-coloured wings, but when it alights it loses all its glory and becomes virtually invisible, owing to the reddish tint of its body and elytra.

PYRGODEIRA ORISTATA, Fisch. d. W.—I saw this singular grasshopper, with a helmet-shaped thorax and pink under-wings, on June 17th, crawling on a corn stalk.

EREMOBIA CISTI, F.—Dr. Festa found numerous examples of either sex and also the larvæ at Jerusalem, Jericho, Mar Saba, and Es-Salt. At the end of April little parties of this grasshopper were leaping like frogs here and there among the groves of orange and olives at Jaffa, and I captured examples at Jerusalem from June 9th, when I found one immature, until August. I have one of a pale ochreous colour.

ACRIDIDUM ÆGYPTIUM, L. (*tartaricum*, Cyrill.).—Flies about the orange groves of Jaffa, and among the orchard trees at Jerusalem, settling on the dark foliage. Two examples presented me by Miss Fitzjohn have a pinkish tinge, and another is of unusual size.

SCHISTOCERCA PEREGRINA, Oliv.—This I saw settle like a shadow at the end of April, in company with *Truxalis unguiculata*, on the Jaffa sand-hills; and I again noticed it in the cornfields on the slope of Olivat on May 8th.

CALOPTENUS ITALICUS, L.—All I found around Jerusalem, July 10th, nine have their hinder tibiæ yellow, and not red like those I have taken in Europe, and their thorax has often an earthy orange tint favouring their concealment on the soil of Palestine.

THISOICETUS, species?—Jaffa, and one immature from Jerusalem, May 17th, mixed up with the above.

LEPTOTERNIS GRACILIS, Eversm.—Plentiful on dry, sun-baked, grass plots, north of Jerusalem, from the middle of June until September. The male, at least, makes a burr when it opens its wings to leap; probably, as in *Psophus stridulus*, L., by the friction of the costal wing-vein beneath the advancing elytron, but any file-like serration is, in either case, hard to distinguish.

PORTHETIS, species?—With the merest rudiments of wings, was crawling on the cornstalks on Olivat on May 8th. *P. Raulinii*, Lucas, is found in Syria.

LOCUSTODEA.

TYLOPSIS LILIIFOLIA, Fab.—With the abbreviated elytra grey and spotted, or green or straw colour, and spotless; the former found July 10th, the latter June 16th and July 20th.

PACHYTRACHELUS, species?—Appeared one day, July 3rd, at the bottom of an excavation made by the Palestine Exploration Fund, near the Pool of Siloam.

GRYLLODEA.

GRYLLUS ALGERICUS, Sauss., was found by Dr. Festa at Jerusalem on March 17th, and again noticed by him at Es-Salt, and on the eastern bank of the Jordan.

In the determination of the foregoing species I have had the kind assistance of Messrs. Kirby and Malcolm Burr, and Signor Giglio-Tos, to whom I make my acknowledgments.

In the Valley of the Jordan and around the Dead Sea, or it may be on the maritime plain of Sharon, where the temperature is greater or the vegetation more rank, certain species of *Orthoptera* that are rare, or never seen, at Jerusalem may probably be found. Near Jericho Dr. Festa met with *Heterogamia livida*, Brunn., *Eremiophila Génési*, Lefeb., and *Empusa pennicornis*, Pallas, *Truxalis unguiculata*, Ramb., *Stenobothrus biguttulus*, Lin., *Sphingonotus Kittaryi*, Sauss., and *Cosmorrhysa sulcata*, Stål, *Isophya Festæ*, Giglio-Tos, and *Gryllotalpa vulgaris*, Latr., which, like the *Stenobothrus* above mentioned, indicates the presence of springs and moisture not frequent on high ground.

Redbridge, Southampton :
1898.

Pyrameis cardui on December 30th and January 2nd.—Near the mouth of the River Axe on December 30th, in the afternoon, I saw a much-worn *P. cardui* disporting itself along the sunny side of a wall, and three others on the cliffs at Seaton on January 2nd.—A. E. EATON, Seaton, Devon: January, 1899.

[This is probably an unprecedented record. They can scarcely have been other than individuals aroused from hibernation by the prevailing warm weather, and they teach us how little we know about the hibernating habits of the insect in this country. We cannot call to mind anything on the subject save Mr. J. H. Carpenter's note in this Magazine, 2nd series, vii, p. 279.—EDS.]

Query concerning Lycæna Arion.—I should be very grateful if any of your correspondents could tell me of a station on the Continent where *Lycæna Arion* is common, and the approximate date of its appearance on the wing. I am anxious to secure a number of pregnant females with a view to breeding the insect.—C. C. DALLAS, Lymington, Hants: January, 1899.

Eupithecia arceuthata, Fr., and *Ptocheuusa osseella*, Stn., in Surrey.—On July 1st, 1898, whilst collecting *Argyresthiæ* from the juniper bushes on the downs south of Croydon, I caught two specimens of *Eupithecia arceuthata*. As both proved to be females, one was kept alive, and supplied with a sprig of juniper, in the hope that she might deposit ova, but, unfortunately, the only result was that a beautiful specimen was destroyed.

At the same date and place, two *Ptocheuusa osseella* were netted late in the afternoon, flying over the stunted down-herbage.

These moths appear to me very interesting additions to the Surrey list, especially so from their being captured in a locality much collected over by the metropolitan Lepidopterists.—BENJ. A. BOWRE, Lee: *January 10th*, 1899.

Some Carnarvonshire Coleoptera.—The results of a few days' collecting in the beginning of August last by my friends Messrs. Brockton Tomlin, Burgess Sopp, and myself, in North Wales, may not be without interest to some of the readers of this Magazine. The scene of our operations was the western side of the Conway valley, between Trefriew and Conway, and was principally confined to the devious course of the river Roe, an inconsiderable stream, which, rising in the high mountains above Aber, falls into the Conway near Tal-y-Cafn, a district which, as far as I am aware, is virgin ground to the Coleopterist. The weather at the time of our visit was hardly the most conducive to success, as on days when it did not steadily rain, so violent a gale prevailed that collecting, except in the most sheltered corners, was impossible. The time of year also (the first week in August) is not a period propitious to comprehensive collecting of *Coleoptera*, so that the list of species we are able to enumerate cannot in any sense be regarded as representative of the district.

Our collecting naturally divided itself into three spheres:—(1) The high mountain slopes and summits above 1500 feet; (2) The lower course of the mountain streams, and beating and sweeping the vegetation of the lower part of the valley; (3) The banks of the Conway itself—here a tidal estuary—this part of the collecting being chiefly confined to an examination of tidal and flood refuse.

(1) My experience is that collecting *Coleoptera* on high mountains is a very poor business after the end of June, and we were not surprised that our list of mountain species was very limited. On these summits we failed to take the desired *Carabus glabratus*, and found that the commonest *Geodephaga* under stones were *Harpalus latus* and *Patrobus excavatus*. We also took *Carabus arvensis*, *Nebria Gyllenhali*, *Pterostichus vitreus*, *Olisthopus rotundatus*, *Trechus obtusus*, *Staphylinus Casareus*, *Corymbites aeneus*, *C. quercus*, and other common species, noticing the fact that all the specimens of *Pterostichus madidus* at these high elevations had much redder legs than the ordinary lowland form. In moss and reeds we took *Homalota eremita*, *Mycetoporus angularis*, *M. lepidus*, *Othius myrmecophilus*, *Stenus tempestivus*, *S. similis*, *S. providus*, var. *Rogeri*, *Olophrum piceum*, *Anthobium torquatum*, *A. ophthalmicum*, *Atomaria Hislopi*, and *Donacia sericea*, while in wet moss in water courses *Quedius auricomus* was not rare. *Stenus Guynemeri* occasional, and *Myllena brevicornis* abundant. Here we also took all the British species of *Lestera* and a *Myllena* which may prove to be *M. minuta*. The small peaty pools on the high mountain tops yielded *Philhydrus melanocephalus* in profusion and *Helophorus anisopennis*; we also took in these pools *Hydroporus nigrita*, *H. morio*, *H. celatus*, *H. tristis*, *H. Gyllenhali*, and one specimen of *H. obsoletus*. The only *Agabi* and *Ilybi* seen were of the commonest species.

(2) Further down the valley, where the stream became larger and its margins exposed little beds of shingle, we found *Bembidium tibiale*, *B. atrocaeruleum*, *Homalota currae*, *H. elongatula*, *Cryptohypnus dermestoides* and *C. quadriguttatus* com-

monly, while *Homalota cambrica* and *H. hygrotopora* were rare; a couple of *Scopæus sulcicollis* was an unexpected find, as was also a single specimen of *Anisotoma ovalis*. Under stones and in submerged moss *Elmis æneus*, *Henicocerus exsculptus*, *Octebius bicolor*, *O. rufomarginatus*, and, very abundantly, *Limnebius truncatellus*. Sweeping and beating by the river side gave but poor results, it being too late for the bulk of the *Rhynchophora* or *Malacodermata*. We, however, took *Hydrocyphon deflexicollis* in abundance, and also, more or less commonly, *Lasia globosa*, *Chrysomela varians*, *Cryptocephalus pusillus*, *Strangalia armata*, *Phytobius quadrituberculatus*, *Rhinoncus perpendiculararius*, *Mecinus pyraister*, and *Limnobaris T-album*. In moss in a small wood the only noteworthy capture was *Quedius pioipes*.

(3) In the tidal drift on the banks of the Conway occurred one of the best species we took—*Chaetocnema Sahlbergi*. Here were also *Phædon tumidulus* and *P. concinnus*, *Phyllotreta sinuata*, *Cercyon hæmorrhous*, and *Cercus rufilabris*. *Staphylinus Cæsareus* was not uncommon, but of *S. stercorarius* only a single specimen allowed itself to be captured. Other *Staphylinidæ* were *Quedius rufipes*, *Q. semianeus*, *Q. maurorufus*, *Philonthus ventralis*, *Ocypus morio*, *Tachyporus formosus*, *Paderus littoralis*, *Aleochara bipunctata*, *Ocalea badia*, *Falagria thoracica*, *Mycetoporus splendens*, *Megacronus analis*, and a multitude of common *Philonthi*, *Homalota* and *Steni*.—W. E. SHARP, Ledsham, Cheshire: November 24th, 1898.

Dynastes Hercules in Bedfordshire.—It may be of interest to note than an example of this fine South American beetle was taken early in September last upon a hedge near Biggleswade. It was given by the boy who captured it to Mr. Alfred H. Blake, of High Street, Biggleswade, who sent me a sketch of the insect, together with a suggestion that it might possibly have been imported with Esparto grass, large bales of which are constantly arriving at the paper mills in the town. The insect must of course have been introduced; but the bales in question appear to come from the Mediterranean ports and from Algeria.—THEODORE WOOD, 157, Trinity Road, Upper Tooting, S.W.: November 25th, 1898.

Philonthus pullus, Nordm., and other *Coleoptera* near Bridgend.—I have several species to add to the fauna of the spot at Candleston described in the November number of this Magazine (pp. 256, 257). First and foremost *Philonthus pullus*, Nordm., of which I took three examples in July, running on damp sand, where the dried up stream had flowed. *Philonthus micans*, *P. quisquiliarius*, *Stenus atratulus*, and *Notiophilus substriatus*, also occurred here.—B. TOMLIN, Llandaff: January 6th, 1899.

Hydræna pygmæa, Wat., &c., near Mold.—A single specimen of *Hydræna pygmæa* was found by me last April on a stone in the River Alyn, at Rhydymwyn, near Mold. *Homalota cambrica* and *H. curraz* were common in the shingle, and *Mantura obtusata*, *Cryptohypnus dermestoides*, and *C. 4-guttatus* were in evidence.—ID.

Brachysomus setulosus, Boh., at Chesham, Bucks.—In November, 1896, I found three specimens of this weevil in some siftings of dead leaves collected just within a wood near Chesham. The past November, as will be remembered, was remarkably mild, and therefore it seemed a favourable opportunity to again look for the insect;

this time, profiting by Mr. J. J. Walker's experience with the species, I paid special attention to the recently fallen dead leaves, with the result that one visit produced quite as many specimens as I cared to undertake to set.

Other *Coleoptera* found at the same time were—*Badister sodalis*, *Homalota linearis*, *H. nigrifolia*, *H. humeralis* (2), *Mycetoporus punctus* (4), *Megacronus inolinans*, *Quedius semianeus*, *Stenus Erichsoni*, *Atomaria umbrina*, *Cryptophagus setulosus*, *Ceuthorrhynchidius quercicola*, and *Acalles ptnoides*; the last named was probably attached to some small twigs of beech which were lying on the ground at this spot. The *Brachysomus* seemed to be distributed for a very considerable distance along the border of this wood, which is situated on the chalk, and has a southern aspect.—E. GEO. ELLIMAN, Chesham, Bucks: January 9th, 1899.

Steni and other Coleoptera in Richmond Park.—During the past three months I have been working, whenever other duties gave leisure, the banks of a small pond in the Park for *Steni* and other damp-loving *Staphylinidæ*. The pond, a very small one, occupies a sunny sheltered position in a wood, its banks are grown over with reeds, and it is at the roots of these, and under the decaying reed stems and dead leaves about them, that all my captures have been made. In September, when I first began to work it, before the long drought broke up, the pond was quite dry, though the ground was still soft and damp in the centre, now it is quite full again. At this small spot I have now taken nineteen species of *Stenus*, some of them by no means generally common; the following is a complete list:—*Juno*, F., *speculator*, Er., *providus* (v. *Rogeri*), Kr., *bupthalmus*, Grav., *incrassatus*, Er., *melanarius*, Steph., *canaliculatus*, Gyll., *pusillus*, Er., *brunnipes*, Steph., *impressus*, Germ., *aerosus*, Er., *binotatus*, Ljungh., *bifoveolatus*, Gyll., *picipennis*, Er., *cicindeloides*, Grav., *tarsalis*, Ljungh., *paganus*, Er., *latifrons*, Er., *fornicatus*, Steph. It was the discovery of *S. fornicatus* which induced me to thoroughly work this spot, as judging from my friends' collections that insect is by no means common. In the Ent. Mo. Mag. for July, 1868, the late Mr. Rye recorded a similarly large number of species of *Stenus* from a very limited area on Barnes Common, a few miles away from my spot; he found twenty-two in all, and all of the above except *aerosus* and *impressus*, while *pallitarsis* is the only at all local species he got which I have not yet come across, but it is quite possible as spring comes on I may increase my list; I may add that most of the species were in fair numbers.

Amongst other insects taken at this spot were *Oxypoda longiuscula*, Er., *Ocyusa maura*, Er., *Ocalea badia*, Er., *Homalota xanthoptera*, Steph., and *marcida*, Er. (this last with the outstanding hairs at the joints of the antennæ very marked), *Gnypeta labilis*, Er., *Conosoma pubescens*, Grav., *Quedius fuliginosus*, Grav. (not a common species), and *nigriceps*, Kr., *Lathrobium terminatum*, Grav., *Cercyon hamorrhous*, Gyll., *Bembidium articulatum*, Panz., *Stenolophus vespertinus*, Panz., *Philhydrus minutus*, F., and several others still undetermined. Mr. Donisthorpe, who visited the spot with me one day to secure *S. fornicatus*, turned up a couple of *Deinopsis arosa*, Steph.—T. HUDSON BEARE, Park House, King's Road, Richmond: January, 1899.

Cryptocephalus exiguus, Schneid. (= *Wasastjernæ*, Gyll.): an addition to the Suffolk Fauna.—Whilst sweeping in some marshes near Oulton Broad in June last I captured a specimen of this rare beetle, which has not previously been recorded.

for the County. Mr. Morley and Mr. Newbery were both inclined to think that the insect was referable to *C. querceti*, it being 3 mm. in length, but Mr. Champion says that, "by the sculpture of the thorax it can only be *C. exiguus*, of which it is a large ♀, with the apex of the elytra smoother than usual." Edwards records it ("Fauna and Flora of Norfolk—*Coleoptera*") from "Eaton Common, August, 1888; Horning (*Thouless*); Woodbastwick (*Power*)," but he does not say how commonly. I know of no other British records.—E. C. BEDWELL, Holmedale, Carlton Colville, Lowestoft: *January 14th*, 1899.

Coleoptera near Southampton.—In August and September last the following were some of my best captures:—*Aphodius nitidulus*, *A. rufescens* and *A. erraticus*, all common in sheep dung, especially *A. nitidulus*. *Scolytus rugulosus*, rather common in a dead apple tree. *Coccinella hieroglyphica*, plentiful under fir trees, together with *Micraspis 12-punctata*, the black variety of the former being common. In a dead hedgehog I obtained *Hister merdarius* and *Necrophorus vestigator*. Other captures were—*Strophosomus retusus*, abundant on heath, *Centhorrhynchus ericæ*, *Sibynia primita* and *Rhinoncus bruchoides*.—L. M. BUCKNILL, Thornfield, Bitterne, Southampton: *December 18th*, 1898.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *November 21st*, 1898.—Mr. P. W. ABBOTT, Vice-President, in the Chair.

Mr. P. W. Abbott showed *Hydrilla palustris*, taken at Wicken Fen this year, a short series, including a dark one, nearly black; also *Agrotis cinerea* from Brighton and Wyre Forest; those from Wyre Forest (where he took six or eight) were very different from the Brighton ones, looking like a different insect, they were mouse-coloured, with definite but not conspicuous markings, while those from Brighton were whitey-grey in colour, with very pronounced markings. Mr. R. C. Bradley, *Myrmosa melanocephala*, ♀, from Sutton, with an apterous ichneumon, *Aptesis nigrocincta*, ♀, which is remarkably like it in general appearance; he said that he understood that the ichneumon was a species infesting *Hibernia defoliaria*. Mr. J. T. Fountain, some good series of moths taken in the suburbs close to the busy parts of the town; these were *Calocampa exoleta*, *Cerastis spadicea*, *Miselia oxyacanthæ*, with var. *capucina*, *Anchocelis pistacina*, and *Phlogophora meticulosa*, long series of the last three.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *October 27th*.—Mr. J. W. TUTT, F.R.S., President, in the Chair.

Mr. Ashdown exhibited twenty British species of Longicorn *Coleoptera*, which he had brought to add to the Society's Collections. Mr. Montgomery, a specimen of the third brood of *Cyaniris Argiolus*, bred on September 30th; specimens of three broods of *Selenia bilunaria*, of which the third brood followed the second; and specimens of a third brood of *Coremia ferrugata*, bred. Mr. Mansbridge, two blue vars. of the female, and two under-side vars. of *Polyommatus bellargus*, and remarked that the female of this species seemed to get more blue year by year.

Mr. Dennis, pupa and cocoon of both *Charocampa elpenor* and *Sphinx ligustri*. Mr. Tutt, on behalf of Mr. Gordon, a considerable number of species taken in Wigtonshire, including *Saturnia pavonia*, with much red on the hind-wing, a pale fawn *Smerinthus populi*, *Phalera bucephala*, with right fore-wing dark, *Cænonympha Typhon*, chiefly var. *Rothliebii*, strongly banded *Pelurga comitata*, and others. Mr. Adkin, variable series of *Bryophila perla*, *B. muralis*, and *Botys flavalis*, to illustrate his paper, entitled, "Lazy Days by the Sea;" a discussion ensued.

November 10th.—The President in the Chair.

The evening was devoted to a Special Exhibition of Varieties, and was a most successful gathering. Mr. Robinson, on behalf of Mr. A. H. Jones, of Eltham, specimens of the following species and varieties:—*Lycæna Corydon*, a light brown female; *Melanargia Galatea*, an unusually perfect white band; *Argynnis Paphia*, var. *Valezina*, with basal spots confluent; *Xanthia aurago*, nearly unicolorous; *Ephyra pendularia*, with red suffusion; *Thais Cerisyi*, a melanic female from Armenia; and *Argynnis Pales*, v. *Arsilache*, from the Engadine. Mr. Robinson also exhibited gynandromorphous specimens of *Cleora lichenaria* and *Crocallis elinguarina* from the New Forest. Mr. Chittenden, *Xanthia aurago*, bred, yellow, pink, and dark forms; *Anchocelis lunosa*, a red form and a black form; black forms of *Agrotis corticea* and *A. segetum*; *A. exclamationis*, red form; and a pair of beautifully marked *Taniocampa incerta*. Mr. Williams, a long bred series of *Pararge Egeria*, very brilliant in colour, and also a fine bred series of *Amphydasis betularia*, derived from ova of an ordinary female, and showing a wonderful development of melanism in some specimens, almost reaching var. *Doubledayaria*. Mr. Mansbridge, *Cabera pusaria*, v. *rotundaria*, bred from N. Kent. Mr. Edwards, *Abraxas grossulariata*, in which the white areas were closely dusted with fine black dots, and having the orange markings very intense. Mr. Rose, a fine series of *Xanthia aurago*, rich uniform red, bright canary coloured, and banded forms of all shades, from Reading. Mr. Butler, of Reading, *Stauropus fagi*, ordinary, dark, pale, and intermediate forms, together with specimens of a second brood; also exceptionally dark forms from an August pairing; a very dwarf captured *Luperina testacea*; *Xanthia aurago*, a series showing all the named forms, together with an undescribed pink form; and a greasy looking form of *Vanessa Io*. Mr. Tutt, specimens of a *Zygæna* received from M. Oberthür, of Rennes, named by him *Z. palustris*, and apparently identical with the large form of *Z. trifolii*, = *Z. trifolii-major*, also a marsh-frequenting form; two cabinet drawers of British *Argynnids* and *Brenthids*, for comparison with Dr. Chapman's exhibit of the same species; and a long series of *Brenthis Pales* from various continental localities. Mr. Pearce, a considerable series of *Bryophila perla* from Folkestone, among which were a good proportion of leaden forms. Mr. South, a bred series of thirty-five *Spilosoma lubricepeda*, var. *Zatima*, and seven males of the type, from the same batch of *Zatima* eggs; *Eubolia limitata*, light golden-brown forms, and very dark specimens; *Boarmia cinctaria*, a light form bred from Irish ova; and *Hydracia micacea*, bred from potato stems. Dr. Chapman, very long series of *Aglais urticae*, and several species of European *Argynnids*, and read notes on their modifications in the various localities he had visited in Europe. Mr. Lucas, series of *Libellula quadrimaculata*, and of *Calopteryx virgo*, from his own and Rev. J. E. Tarbat's collection, showing great variation, the var. *pranubila* of the former species, and three smoky males of the latter from

Surrey, were very noticeable. Mr. Nevinson, *Cleora glabraria*, very dark; *Fidonia clathrata*, almost unicolorous; *Acidalia contiguaria*, light and dark forms; *Fidonia atomaria*, male, with female coloration; *Carpocapsa pomonella*, unicolorous pale form from a walnut. Mr. Adkin, local forms of *Aplecta occulta*, some magnificent dark specimens; of *Dianthæcia nana (conspersa)* from all the chief British and Irish localities; and his drawers of *Argynnids* and *Brenthids*. Mr. Moore, some grand under-side forms of the Leaf Butterfly, *Kallima Inachis*, and a series of *Salamis antera*. Mr. West, of Streatham, *Vanessa Atalanta*, without spots in the red marginal band of the hind-wings; and *Catocala nupta*, with unpigmented streaks on the hind-wings.—HY. J. TURNER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: December 7th, 1898.—MR. R. TRIMEN, F.R.S., President, in the Chair.

Monsieur Léon Candèze, of 64, Rue de l'Ouest, Liège; Mr. C. L. B. Stares, M.R.C.S., L.R.C.P., of the Infirmary, Wandsworth, S.W.; Mr. A. Russell, of The Limes, Southend, Catford, S.E.; and Mr. C. B. Holman Hunt, of Meddecombra, Watagoda, Ceylon; were elected Fellows of the Society.

Mr. McLachlan exhibited a series of specimens of the Neuropterous genus *Tetracanthagyna*, de Selys, including a pair of a new species from Borneo, which was the largest known of all recent dragon-flies, though it was slightly exceeded in wing-area by the much more slender *Megaloprepus cærulatus*, a common Central-American species. Mr. A. H. Jones, about sixty species of *Lepidoptera*, taken round electric light at Zermatt, in August. Among the more interesting were *Crateronyx taraxaci*, *Ellopiæ fasciaria*, ab. *prasinaria*, *Cidaria cyanata*, *Hadena Maillardi*, a light form of *Dianthæcia casia*, and a fine black variety of *Polia flavicincta*. Dr. Dixey, a series of Pierid butterflies from the Neotropical region to show the existence among them of seasonal forms. The President observed that the exhibit was of special interest, as affording the first recorded evidence of the existence of seasonal dimorphism in Neotropical butterflies. Mr. G. T. Porritt, an extraordinary variety of *Bombyx quercus*, bred in June last by Mr. W. Tunstall, from a larva found near Huddersfield; the specimen was a female of deep chocolate colour, with the band very faintly traced in dark olive. Dr. Chapman, Mr. Lloyd, and Mr. Nicholson, butterflies taken by them in Norway from June 20th to July 22nd, during the past summer, at latitudes 60° 12' and 69° 50'. It appeared from the exhibit that it would have been better to collect a month or so earlier, especially in the more northern locality visited. It was also seen that northern races of butterflies and moths were apt to differ a little from those of the mid-European fauna, but that various named varieties supposed to be characteristic boreal representatives of their species, were often rather aberrations, and not the dominant northern type. This was the case in *Vanessa urticae*, *Erebica Medusa*, *E. ligea*, &c.; on the other hand, as in *Brenthis Selene*, var. *Hela*, the entire local race was of the variety. Papers were contributed by Mr. R. McLachlan, entitled, "Considerations on the genus *Tetracanthagyna*;" by Mr. M. Burr, entitled, "A List of Rumanian *Orthoptera*;" and by Mr. J. H. Leech, on "*Lepidoptera Heterocera* from China, Japan, and Corea."—W. F. H. BLANDFORD and F. MERRIFIELD, *Hon. Secs.*

SIXTY-SIXTH ANNUAL MEETING: *January 18th, 1899.*—Mr. R. TRIMEN, F.R.S., President, in the Chair.

It was announced that the following had been elected as Officers and Council for 1899–1900:—President, Mr. G. H. Verrall; Treasurer, Mr. R. McLachlan, F.R.S.; Secretaries, Messrs. J. J. Walker, R.N., F.L.S., and C. J. Gahan, M.A.; Librarian, Mr. G. C. Champion, F.Z.S.; and as other Members of the Council, Messrs. W. F. H. Blandford, M.A., F.Z.S., and H. St. J. K. Donisthorpe, Dr. T. A. Chapman, M.D., Canon W. W. Fowler, M.A., F.L.S., Messrs. A. H. Jones, F. Merrifield, E. Saunders, F.L.S., J. W. Tutt, and C. O. Waterhouse.

Mr. Trimen delivered an Address, for which a vote of thanks was proposed by Prof. Meldola, seconded by Mr. Distant, and carried. Mr. Trimen replied. Prof. Poulton proposed, and Mr. Elwes seconded, a vote of thanks to the other Officers, with especial reference to Mr. Blandford; this was carried, and Messrs. Blandford, Merrifield and McLachlan replied, and the proceedings terminated.

A FORTNIGHT IN SCOTLAND IN SEARCH OF AQUATIC RHYNCHOTA.

BY G. W. KIRKALDY, F.E.S.

I arrived at Perth early on August 20th, and had the pleasure of making the personal acquaintance of that indefatigable collector, Mr. T. M. McGregor. As it was raining nearly the whole day, I spent the greater part at the Natural History Museum, which is under the Curatorship of Mr. A. M. Rodger. An account of this interesting and well-arranged Museum has been published in "Natural Science," viii, p. 41 (1896).

The 21st was one of the *five* fine days I experienced, and, guided by Mr. McGregor and Mr. Rodger, I journeyed to Methven Bog and Methven Loch. In the latter I dredged up from near the roots of rushes a single nymph of *Nepa cinerea*! a novelty in Perthshire, and, as far as I can trace, in Scotland also. Mr. McGregor informed me that neither he nor Dr. F. B. White had ever taken it in Scotland, and I cannot find any Scottish notice of it.

I also captured an aberration of *Corixa striata*, Linn., in which the fourth yellow pronotal line is split along almost its entire length, and a large irregular yellow blotch occupies the centre and middle of the apical margin of the pronotum. This blotch, due to the non-development of the black pigment, is rastrate. I have never before seen a similar case in the *Corixidæ*. In Methven Bog a single example of *Hydroessa* (= *Microvelia*) *pygmæa* was taken; although Mr. McGregor has captured it before, it has not yet been recorded, with the exception of Edinburgh, from Scotland.

On the 22nd it was pouring, and I therefore resorted to the

Museum, looking through White's collection of exotic *Rhynchota*. His types from St. Helena, Hawaii, and New Zealand are preserved there, with a large amount of undetermined material, but I regret that a thorough search failed to discover the species described (in 1878 and 1879, in the Transactions of the Entomological Society, and the Journal of the Linnean Society) from the Amazon. The loss of these, in many cases, unique specimens, would be much to be deplored.

On the 23rd I did not stop at Ballinluig, where a few weeks previously (at Ben Vrackie, Loch Ordie, &c.) Mr. McGregor had collected *Corixa Bonsdorffii* and *Scotti*, but trained to Pitlochry, and, sending all my luggage (except my collecting apparatus) on to Inverness, walked through the Pass of Killiekrankie, spending the greater part of the day by the shore of the Garry. *Velia currens* occurred in some of the pools formed by the partial drying up of the river in summer, but although the Pass forms one of the most beautiful and romantic Scottish scenes (when viewed from the *Lower Road*, or from the slippery crag-strewn shore), it is not very productive entomologically. On the 24th I walked to Blair Athol, whence, on the right, a winding path leads to Glen Tilt.* This magnificent glen has been visited on rare occasions by entomologists, and in the "Entomologist" for 1878, Dr. White gave a general account and notes on the *Lepidoptera* found there (p. 247).

From Blair Athol to Braemar—the nearest villages to the glen where one can obtain accommodation during August and September—is a distance of thirty miles. From Blair Athol to Forest Lodge—eight miles—a footpath leads into a tolerable carriage road; thence to Bynack Lodge—ten miles—there is only a "bridle path" and for at least half of the twelve miles to Braemar one limps along a stoney and badly kept "carriage road." To a sturdy pedestrian the road is quite practicable, and the grandeur of the scenery, and the utter solitude of the glen, are a full recompense for its fatigues.

At either end the glen is fairly wide, on the north-west side of the river at least, but in the middle, for about ten miles the glen is "so narrow as seldom to give room for more than the river, while in many places its channel is but a ravine through the solid rock. This valley is distinguished by its extreme depth and narrowness, and by the wildness of its upper extremity." On the left, in the distance arises Beinn Dhearg, farther on tower the summits of Beinn Mhuic Duibhe and Cairn Taol, while on the right rises Ben y Gloe.

I commenced my third fine day, the 25th, by climbing the steep

* Pronounced "Tchiltch."

heather clad sides of the last named, and as there was no path of any description, it was rather exhausting work reaching the summit—3670 feet above sea-level—but a magnificent panorama of the Grampians rewarded my efforts. There were a number of tempting lochs near the summits of neighbouring mountains, but, unfortunately, all too far off and in the wrong direction. It is one thing to mark a place as five miles distant *as the crow flies*, and quite another, in the Grampians, to get there. I descended by a beautiful but rugged strath, which ends rather abruptly in a waterfall of perhaps sixty feet in height, and sheer over the edge of this I fell, managing, however, to grasp a branch of a fallen tree; luckily I was just out of the full force of the cascade—had it been otherwise I must have been wrenched from my hold and dashed to pieces on the rocks beneath—and was able to hoist myself up again. I did a little rather ineffectual sweeping, but did not stop at Loch Tilt, as I wished to reach Braemar or Inverey before nightfall. The dusk falls very early in these silent mountain-encircled glens, and as the path through Glen Tilt is quite obsolete in some places, leading into marshy ground in others, it is well not to linger there too long. “In fact, in the whole of its course there are only about half a dozen places where it is possible to get out of it, except by very arduous and often dangerous climbing.” Owing, perhaps, to the almost entire absence of trees—there are in places, mostly by the river bank, a few small birches and alders—the glen has a very desolate appearance, and its solitude may be gauged from the fact that from near Marble Lodge to the Linn of Dee, a distance of about sixteen or seventeen miles, I met only four people, and retracing my steps two days later, a similar number. These were not wayfarers, but the occupiers of the one or two lodges passed. The fact is, the path through Glen Tilt is simply a little used right of way through the Forest of Athol, land given up entirely to shooting.

I started next day for Loch na Gair (Lochnagar), as not only is the Braemar scenery very fine, but the district is one well worked by Dr. White, who obtained there a number of good *Rhynchota*. Fortune, however, was not with me; it commenced to drizzle soon after my departure, and the mist gradually thickened; *Diptera* were always with me, even during the strongest downpour; a little way out of Castleton the Clova footpath turns off to the left, passing Loch Callatar, where I spent some time collecting. All the roadside pools and ditches were overhauled, resulting in a number of *Gerris Costæ* and *Corixæ*; unfortunately—and this was the Fate that pursued me in all my collecting—nine-tenths of the *Corixæ* were

nymphs, for which I was not prepared at the end of August and beginning of September, and this was the more extraordinary, as the wheat crops were, in some places at least, rather early. By this time the drizzle had developed into a downpour. The mist had become thicker and thicker, white wreaths descending the indistinct outlines of the mountains. Nevertheless, I collected some two and a half hours at the Loch, in the hope of better things, and for half an hour I hunted *Salda*, but only secured two; I was struck by the number of *Velia currens* under stones, often two or three yards away from the water. The shores of Loch Callatar have large collections of stones and small rocks in places, possibly a good hunt in better weather would yield rare or new *Salda*. I essayed to ascend Loch na Gair, as near the summit a *laochan* or small loch, which gives the mountain its name, lies concealed, where I had hoped to find plenty of *Corixa cavifrons*, *carinata*, *Germari*, and, perhaps, *caledonica (cognata)*; but, as by the time I had ascended some fifty yards or so up the mountain path, I could not see the *bottom*, much less the top, and as the mist was increasing, I retraced my steps to Inverey, the rain—and the *Diptera*—accompanying me the best part of the way.

On the 27th I returned down Glen Tilt, rain again being the order of the day. I was imprudent enough to say in the "Entomologist" (August, 1898), that weather should make little difference to the collector of aquatic *Rhynchota*, and, of course, had to put my assertion to the test, collecting in every pool and ditch through an almost incessant rain. The ubiquitous (*in the Highlands*) *Gerris Costæ* was almost the only insect at large, though I obtained a few *Corixæ*, mostly immature, at Loch Tilt; after collecting for an hour and a half, in stinging hail at this Loch, I was compelled to retreat, and I arrived in a very damp condition at the cottage of one of the Duke of Atholl's keepers, who very kindly put me up till Monday morning. Sunday was a day of showers, and with the exception of a couple of hours in the afternoon, I rested from my labours. On Monday I walked to Blair Athol, and thence to Kingusie, where I visited Loch Guineach, but, *as before*, nearly all the *Corixæ*, representatives of the only genus of water-bugs I saw, were immature, and, *as before*, showers were prevalent.

From Inverness I walked to Culloden Muir, and on to the fine "circles" of Clava, but found nothing entomological of note. In one small clachan near, however, nothing but Gaelic was spoken. I stayed near Forres three days, enjoying the hospitality of Mr. James Beattie, of Earlsmill, but was again, for the usual reasons, disappointed: there

was, however, *one* fine day, my fourth since arriving in Scotland! I captured some examples of *Corixa Scotti* and *selecta*, the first Scottish record, at Loch Loy, and captured a large number of *Corixæ* in two private lochs in the grounds of Darnaway Castle; these were fringed thickly with reeds, the home of numerous wild duck, and were very difficult to work.

As regards the country from Blair Athol to Loch na Gair, the weather did not allow me to gain any idea of the land species, but I am not inclined to think it very productive, except perhaps in some of the ravines. *Lepidoptera* seemed remarkably scarce. I know very little about *Heterocera*, but the *Rhopalocera* are, I think, all familiar to me, and not a single specimen passed within my ken during the four days, and less than a dozen *Heterocera*. I *saw* one large dragon-fly, and captured two or three nymphs and a few water-beetles; I hope, however, to give a list of my captures as soon as I can work them out.

Considering that I dredged Loch Tilt most assiduously for an hour and a half during a deluge of hail, Loch Callatar for two and a half hours in driving rain and mist, Loch Guineach for an hour, several hours during three days near Forres, as well as innumerable roadside ditches and pools, I was much disappointed at the lack of response on the part of the *Rhynchota*.

Wimbledon: November, 1898.

P.S.—February 15th, 1899.—I find that *Nepa cinerea* is included in Norman's Record of *Hemiptera-Heteroptera* taken in Morayshire.—G. W. K.

ENTOMOLOGICAL NOTES FROM GLEN LOCHAY AND LOCH TAY INCLUDING RECORD OF AN *OXYETHIRA* NEW TO BRITAIN.

BY KENNETH J. MORTON, F.E.S.

The following notes may be regarded as a supplement to those in vol. xxxi, pp. 260—263, and vol. xxxiii, pp. 1—4.

The 1st of July, 1898, found us established in our old quarters in Glen Lochay, and no time was lost in setting to entomological work, but it soon became apparent that the glorious weather of June, 1895, had given us a better sample than an ordinary summer can produce in the locality, and when the results came to be summed up there was remarkably little to record that was new. There was no lack of sunshine during our stay, but an almost constant cool, dry wind kept blowing, the nights being rather cold, with little movement of insect life.

Many familiar forms were seen, some in great abundance, others noticeably scarcer than on the previous occasion. *Aschna cœrulea*, Ström, belonged to the former category, *Erebia epiphron* to the latter. These two outstanding types of our northern fauna received early attention. Ascending the hill just on the other side of the river, *E. epiphron* was found in fair numbers, and going towards the summit (about 3000 feet) there were seen in greater or less abundance, *Sericoris irriguana*, *Scopula alpinalis*, *Scoparia alpina* and *Crambus furcatellus*, the last being the least common. On no other occasion were these Alpine species seen flying so freely. In striking contrast was a day spent on Ben Lawers; the wind was strong and cold, and, although there were some glimpses of sunshine, not a single insect was taken that day. It was not, however, lost, as nearly all the more interesting Alpine flowering plants of that famous mountain were seen.

The only butterfly seen on this visit, and not mentioned in my former notes, was *Argynnis Aglaia*, it was not common. *Nudaria mundana* was found on old walls, and came frequently to lighted windows. *Hadena pisi* and a few commoner and usually much worn *Noctuæ* were the sole results of sugaring. The *Plusiæ* included *iota* (much scarcer than *pulchrina*) and *festuæ*. *Phibalapteryx vittata* was the only additional Geometer taken of any consequence. Larvæ were conspicuously absent; a brood of *Pygæra bucephala*, one or two tiny larvæ of the commoner *Notodontidæ* and "hook-tips," being all that were observed. In *Neuroptera* and *Trichoptera* more was done, although the new records are not numerous; one, however, being a species of *Oxyethira* new to the British Isles.

A striking feature was the absence of *Chrysopæ*. I was despairing altogether of taking any example of the genus, and captured but one in Glen Lochay near the end of the month, and another on Loch Tay side on the very last day of our stay; both appear to be *C. alba*.

With regard to *Trichoptera*, a single small *Micropterna lateralis* was taken at a considerable elevation when we were after *E. epiphron*. *Crunæcia irrorata* was frequent at one spring. *Leptocerus fulvus* was seen flying at a quiet part of a stream which issued from a mountain lake. *L. commutatus* was common on some parts of the river Lochay. *Beræa maurus* was common at several springs and moist places. In a densely shaded part of one of the burns *Polycentropus Kingi* and *Wormaldia mediana* were found rarely. Five species of *Hydroptilidæ* were taken; *Hydroptila forcipata*, which was common; *H. Maclachlani*, a single specimen at the locality of *L. fulvus*; *Oxyethira costalis* common at Loch Tay; *O. falcata*, not uncommon at springs; and,

lastly, *O. simplex*, Ris, the species new to our lists. The nature of the locality affected by *O. simplex* will perhaps be best understood by stating that along with it were found *Diplectrona felix* and *C. irrorata*. *O. simplex* is rather difficult to make out unless from specimens prepared as microscopic objects, the genitalia being simple in form and usually much concealed. The description and figures will be found in the Mitth. Schweiz. Ent. Ges., Bd. 9, Heft 10, p. 420.

Edinburgh: January, 1899.

**STICHOGLOSSA SEMIRUFA, Er.: A GENUS AND SPECIES OF
STAPHYLINIDÆ NEW TO THE BRITISH LIST.**

BY G. C. CHAMPION, F.Z.S.

Amongst some *Coleoptera* sent to me to name by Mr. B. S. Harwood I have found a male example of this very distinct and interesting addition to the British list. This insect was obtained by Mr. Harwood in the vicinity of Colchester when beating oaks for larvæ in May last. The genus *Stichoglossa*, Fairm. (= *Stenoglossa*, Kraatz), is very closely allied to *Ischnoglossa*, Kraatz, but appears to differ from it in the structure of the parts of the mouth, &c.; Mulsant and Rey, however (Aléochaires, p. 399), include both under one generic name, *Stichoglossa*. *S. semirufa*, which is compared by Erichson with *Silusa*, is easily recognisable amongst its allies by the peculiar coloration and shining surface, as well as by the very pronounced ♂ characters. The tarsi are all 5-jointed. The following is a short description of the species:—

Subparallel, rather robust, shining, finely pubescent; black, the thorax and elytra rufous, the latter with the scutellar region and an indistinct patch at the sides about the middle slightly infuscate; the legs and oral organs rufo-testaceous; the antennæ reddish, with the basal joints paler. Head very finely punctured; antennæ about as long as the head and thorax united, much thickened, joints 5—10 strongly transverse, 11 suboval, as long as 9 and 10 united. Thorax strongly transverse, very much wider than the head, and almost as wide at the base as the elytra, very finely and closely punctured. Elytra slightly longer than the thorax and very distinctly punctured. Hind body a little narrowed posteriorly, very shining, sparsely punctured; the fifth dorsal segment without transverse depression; the sixth and seventh segments each with a prominent oblong tubercle or carina in the centre before the apex in the male. Length, 3 mm.

Compared with its nearest ally, *Ischnoglossa prolixa*, Er., the insect is more robust, and has much stouter antennæ, and the general coloration and ♂ characters are very different. Jacquelin-Duval (Gen. Col. Europ., ii, t. 7, fig. 35) figures a male of it under the name of

Oxyropa semirufa. Mulsant and Rey record the species from the environs of Paris, Lyons, Tarbes, Cluny, Normandy, Beaujolais, the Alps, &c., and Kraatz gives S. Germany as its habitat. According to the first-mentioned authors, it is found at wounded places (plaies) on oak trunks, and also amongst dead leaves.

Horsell, Woking:

January 30th, 1899.

DESCRIPTION OF TWO NEW SPECIES OF *RHYNCOGONUS*
(*OTIORHYNCHINI*).

BY R. C. L. PERKINS, B.A.

The genus **Rhyncogonus* was formed for the reception of two species obtained in the Hawaiian Islands, but at the present time eighteen species are known to me from that locality. The genus is also said to occur in New Zealand. The two species here described were taken by Mr. J. J. Walker, one in Oparo Islands, the other in Nuka Hiva (Marquesas), and have been submitted to me by Dr. Sharp for comparison with the Hawaiian species. Both are quite distinct, although the species from Nuka Hiva is closely allied to some of these. The other is much more remarkable.

RHYNCOGONUS WALKERI, *sp. nov.*

Niger, depressus, subtiliter pubescens, parum nitidus. Rostrum nitidum, rugoso-punctatum. Oculi fortiter prominentes. Antennarum articulus secundus tertio conspicue brevior. Pronotum fere æque longum ac latum. Elytra ubique asperula, subseriatim punctata, subtiliter pubescentia, pseudopipleuris dense velutinis. Abdomen ♂ subtus grossius denseque, ♀ subtilius granulato-sculpturatum, segmento apicali ♂ subtruncato.

Long. (rostr. incl.), 10.5—12.5 mm.

This species, in form and general appearance, is very similar to some of the Hawaiian species of the genus, but it differs from all of them in sculpture, especially in that of the ventral surface of the hind body. In the ♂ this part is densely and coarsely granulated; in the ♀ the sculpture is of a similar nature, but much finer. This granulation is apparently due to punctures, which are very obliquely directed. The punctuation of the elytra is of a somewhat similar character. The apical ventral segment of the ♂ is wide at the apex and there ciliated, and sparsely clothed with fine suberect hairs; that of the ♀ is more acute and more finely punctured. In both sexes the ridge marking off the pseudopipleural portion of the elytra is sharp and well marked from base to apex, and this portion is densely pubescent. The short first joint of the funiculus of the antennæ distinguishes the species from nearly all the Hawaiian species, and those with which it agrees in this respect are otherwise totally dissimilar.

* Sharp, Trans. R. Dub. Soc., vol. iii (series 2), p. 176.

Nuka Hiva Island, Marquesas Islands (1500 feet). "On a *Lamium*-like plant" (*J. J. Walker*).

RHYNCOGONUS GRACILIS, *sp. nov.*

Niger, nitidus, gracilis, subfusiformis, pallide pubescens. Caput cum rostro nitidum, punctatum, hoc impresso. Oculi fortiter prominentes. Antennarum articulus secundus tertiusque subæqui-longi. Pronotum nitidum, punctatum, haud transversum, lateribus parum rotundatis. Elytra angusta, elongata, crasse punctata, subæneo-micantia, pubescentia brevi decumbente vestita. Abdomen subtus nitidum, basi impressa, parum distincte punctatum, breviter inconspicue pubescens.

Long. (rostr. incl.), 13 mm. Lat. elytrorum max., 4.75 mm.

The single example of this very distinct species is probably a ♀, as the apical ventral segment of the hind body is narrowly rounded at the apex. The elongate narrow form, and the elytra which show a faint but evident metallic tint, and have a very dense punctuation, readily separate it from any other. The appressed clothing is somewhat intermediate in character between hairs and scales, but at the apex of the elytra it becomes longer and more hair-like. The hind body beneath has the sculpture very indefinite, and is only inconspicuously clothed, except at the sides, where the pubescence is denser and forms a line on each side. The middle coxæ are decidedly closer together than in the other species of the genus. The pseudopleural and dorsal surfaces of the elytra form a sharp edge only for a short distance from the shoulders.

Ahurei Bay, Rap-à (Oparo) Island, (*J. J. Walker*). One example.

Cambridge: December, 1898.

AMARA STRENUA, ZIMM., AND OTHER *COLEOPTERA* IN FLOOD-RUBBISH AT IWADE, NORTH KENT.

BY A. J. CHITTY, M.A., F.E.S.

The stormy weather, accompanied by spring-tides of unusual height, which occurred on and about March 19th of last year, injurious as it must have been to the sheep-owners of that part of North Kent which lies opposite to the Isle of Sheppey, was undoubtedly most beneficial to any Coleopterist in a position to take advantage of the situation. A breach in the sea-wall on the south bank of the Swale, or channel between Sheppey and the mainland, caused the flooding of some hundreds of acres of meadow land between Iwade and the King's Ferry bridge, over which the railway passes to Sheerness. As was the case with the great Sheppey flood of November, 1897 (*cf. Ent. Mo. Mag.*, xxxiv, pp. 56, 57), an enormous number of beetles

were brought to light. Mr. J. J. Walker was kind enough to direct my attention to the rubbish left behind on the retirement of the waters, which he had already investigated with a large measure of success; and as I was spending Easter within ten miles of the locality, I found myself, with the aid of a bicycle (an almost indispensable adjunct to collecting), on the marshes at an early hour on Easter Monday. It was some time, however, before I found the flood-rubbish, and in the meantime I worked the ditches for *Bagöus*, *Ochthebius*, &c. When at length I did come across it, the enormous amount of material suitable for harbouring beetles was quite embarrassing. One deposit, some forty feet by twenty, was evidently full of beetles, and from this, along a raised causeway marking the site of one of the old sea-walls, there extended a thin yellow line quite half a mile in length, showing many places where the deposit lay deeper. The rubbish consisted chiefly of dry grass-stalks from the meadows, and remains of reeds from the ditches, and was in excellent condition for working. It is by no means an easy task though to work a large amount of flood-rubbish satisfactorily, and I believe that the best plan would be to fill large muslin bags with the best stuff, and leave it tied up for a few hours while working for insects elsewhere, examining the contents of the bags later on, when the beetles would probably be found, either at the bottom, or in the neck of the bag. Of course, the *Carabidæ*, most of which are found on the ground under rubbish, would have to be looked for separately.

Working as I was with only a mackintosh cloth, the beetles were so numerous that usually a large proportion of the more active species were over the side of the cloth before it was possible to secure them. In fact, the large number of beetles in sight at one time caused almost as much embarrassment as the quantity of rubbish. It requires a very quick eye, as well as a ready hand, to secure the better beetles rapidly, without at the same time bottling a host of the common kinds; and if the collector's knowledge of beetles in the field is at all rusty, he is compelled to run the risk of either taking numbers of useless specimens which he does not want, or of passing over many of the more desirable species.

I was able to visit the Iwade marshes three times in all, and on the afternoon of Saturday, April 16th, had the good fortune to be accompanied by Mr. J. J. Walker, who has been kind enough to check my list of species.

The insects present in great numbers in the rubbish were one or two common species of *Tachyporus*, *Astilbus canaliculatus*, the usually

scarce *Achenium humile*, Nic., and a little black *Cercyon*, which in places lay so thickly as to look as if packets of black seeds had been spilt on the ground.

Among our captures were the following species (those marked * having been taken by Mr. J. J. Walker only):—*Clivina fossor*, L., very common; *Dyschirius æneus*, Dej., *Badister sodalis*, Dufts., * rare; *Chlænium nigricornis*, F., * *Oödes helopioides*, F., * (2); *Stenolophus vespertinus*, Panz., plentiful, an unicolorous dark form, not rare; *Acupalpus consputus*, Dufts., sparingly; *A. exiguus*, Dej., scarce, and var. *luridus*, Dej., in great numbers. *Harpalus rotundicollis*, Fairm., plentiful, and very variable in size; *H. puncticollis*, Payk. (*parallelus*, Brit. Cat.), not rare, including some very small examples. *Anisodactylus binotatus*, Dej., and var. *spurcaticornis*, Dej., sparingly. *Stomis pumicatus*, Panz., very common. *Pterostichus cupreus*, L., in great numbers and variety, the red-legged var. *affinis*, Sturm, frequently occurring, with dark blue, pitchy, and coal-black forms of both variety and type. *P. versicolor*, L., not common; *P. anthracinus*, Ill., plentiful, and *P. gracilis*, Dej., sparingly, usually occurring by single specimens. *P. picimanus*, Dufts., and *P. inæqualis*, Marsh., both common, the red variety of the latter species frequent; *P. minor*, Gyll., sparingly, and *P. vernalis*, Gyll., in great numbers. *Amara* was represented by some ten species, including *A. ovata*, F., *similata*, Gyll., *lunicollis*, Schiödt (not rare), *lucida*, Dufts., *communis*, Panz., *continua*, Thoms., *plebeia*, Gyll., and last, but not least, *A. strenua*, Zimm., sparingly, showing that this species exists on both sides of the Swale. *Anchomenus puellus*, Dej.; *Trechus secalis*, Payk., * rare; *Blechnus maurus*, Sturm, abundant; *Metabletus obscuroguttatus*, * Dufts., scarce; *Bembidium assimile*, Gyll., *Polystichus vittatus*, Brull., one only, and *Brachinus crepitans*, L., in plenty. *Cnemidodus impressus*, F., common. *Copelatus agilis*, F., and *Rhantus notatus*, Berg., sparingly. *Hydrophilus piceus*, L., three ♂ specimens, in each case taken under an extra large heap of rubbish. *Cymbiodyta ovalis*, Thoms., and *Enochrus bicolor*, Gyll., common; *Ochthebius pygmeus*, F.; *Cyclonotum orbiculare*, F., *Ozypoda brachyptera*, Steph.; *Aleochara lata*, Grav., and *A. bipunctata*, Ol.; *Calodera nigrita*, Mann., * one only; *Myrmedonia limbata*, Payk., not rare; *Deinopsis erosa*, Steph., sparingly; *Megacronus analis*, F.; *Heterothops dissimilis*, Grav., *Quedius semianeus*, Steph., and *Leistotrophus murinus*, L. Of *Philonthus* there were eighteen or nineteen species present, among them *P. intermedius*, Boisd., *sordidus*, Grav., *ebenus*, Grav., and var. *corruscus*, Grav., *sanguinolentus*, Grav., *cruentatus*, Gmel., *ventralis*, Grav., *discoideus*, Grav., *quisquiliarius*, Gyll., and var. *dimidiatus*, Er., *fumarius*, Grav. (rather common), *micans*, Grav., and a single example of the rare *P. punctus*, Grav., well known as an inhabitant of the neighbouring Isle of Sheppey. *Xantholinus tricolor*, F., fairly common; *Leptacinus batychnus*, Gyll., and *L. linearis*, Grav.; *Lathrobium longulum*, Grav.; * *Achenium humile*, Nic., in great numbers. *Cryptobium glaberrimum* Herbst, *; *Stilicus orbiculatus*, Er.; *Stenus Juno*, F., very numerous, *S. ater*, Mann., scarce, *Platystethus nodifrons*, Sahlb., *Olophrum piceum*, Gyll., and *Omalium iopterus*, Steph.; *Euconnus hirticollis*, Ill., rare; *Agathidium marginatum*, Sturm, very common; *Hister neglectus*, Germ., not rare, *H. bissexstriatus*, F., and *H. bimaculatus*, L., *Anisosticta 19-punctata*, L., abundant; *Seymnus testaceus*, Motsch. (*Mulsanti*, Wat.), sparingly. *Atomaria gutta*, Steph., *

and *Syncalypta hirsuta*, Sharp, frequent; *Hydrothassa aucta*, F., *Aphodius erraticus*, L., in numbers; *A. sticticus*, Panz., and *A. plagiatus*, L., scarce; *A. luridus*, F., very common, both the pale and the black forms being equally well represented. Mr. Walker and I each met with one or two specimens of a handsome variety of the last mentioned species, in which the base of the elytra is black, and the apex lurid-testaceous, these colours interlacing where they meet on the alternate interstices.

Away from the flood-rubbish, chiefly on the banks of the fresh-water ditches which intersect the marshes, I met with *Dromius nigriventris*, Thoms., *Ochthebius exaratus*, Er., *Coccinella 22-punctata*, L., *Coccidula scutellata*, Herbst, and a few specimens of *Bagöus subcarinatus* of Sharp's Catalogue.

27, Hereford Square, S.W. :
January, 1899.

**TRICHOPTERA, PLANIPENNIA, AND PSEUDO-NEUROPTERA,
COLLECTED IN THE DISTRICT OF THE LAC DE JOUX
(SWISS JURA) IN 1898.**

BY ROBERT McLACHLAN, F.R.S., &c.

It had long been my desire to test the capabilities of the Swiss Jura in the way of Neuropterous insects, and this was carried into effect in the summer of 1898, in company with my friend Mr. H. S. Eaton, who has often been my *compagnon de voyage*. In choosing a locality I hit upon the district of the Lac de Joux, in a corner of the Canton Vaud, partly because it appeared to be little known entomologically, and also because it was out of the usual run of English tourists. It did not come up to my expectations; but I do not regret having visited a district in many other ways of great interest.

Our head-quarters were at the village of Le Pont, at the N. end of the Lac de Joux, and there I stayed from July 25th to August 10th. A comfortable old-fashioned hotel is to be found there, but its sleeping accommodation is inadequate to the demand, and the guests are mostly quartered outside its walls. A new hotel, on modern lines, probably now in course of construction, will remedy this; at the same time it will render the primitive simplicity of the village a thing of the past.

The elevation of Le Pont is about 3300 ft., and the highest point in the neighbourhood (Mt. Tendre) rises to over 5500 ft. The hills are clad with spruce fir, with some beech, and other trees that like a dry calcareous soil. Lac de Joux is 5 miles long, by 1½ broad; a small screw steamer makes a zig-zag course on it from one end to as near as it can get to the other, and back again. It is connected with

the much smaller Lac Brenet. And there is still a third lake (not much more than a circular pond), known as Lac Ter, separated from the large lake by an elevated narrow ridge, and of quite another nature, filling a basin in a peaty hollow.

For most Neuropterological purposes the defect of the country is the scarcity of streams, torrents, and waterfalls, and the fact that what large streams there are have the habit (not unknown in other limestone districts) of running underground.

Thus, a stream known as "La Lionne" has its source underground, probably in the mountains, with an open-air course at L'Abbaye on the Lac de Joux, of about a furlong, rushing out of the face of a rock with sufficient volume and force to work powerful saw-mills. Then again the Orbe, after feeding the Lac de Joux and Lac Brenet, takes an underground course from the latter lake at a series of funnels ("*entonnoirs*"), and re-appears three miles in distance, and 750 ft. in elevation, lower down, as a foaming torrent bursting out of the base of a stupendous precipice 1000 ft. high, the spot being known as the "Source de l'Orbe;" but the actual source is far away.* Up in the mountains there is no water in summer, save occasional trickles after rain, and these are at once conducted into cattle troughs, being too precious to be lost.

The lakes produce quantities of fish; "*brochet*" (pike) appeared on the *menu* almost *ad nauseam*. The staple occupation of the inhabitants immediately round the Lac de Joux is cheese-farming, and a delicious *gruyère* is manufactured, the milk for which is produced by a fine breed of cattle, large, well-fed, and scrupulously clean, a contrast to some other Swiss districts. I am of opinion that a Lepidopterist would be well satisfied with the district; to a botanist it is hardly necessary to allude to the richness of a calcareous soil at that elevation.

TRICHOPTERA.

For Trichopterological purposes the district has three aspects, viz.:—(1) the lakes; (2) the streamlets, which are not numerous, and of small size; (3) the "Source de l'Orbe." The most important is undoubtedly the Source de l'Orbe, and to work this properly it is necessary to stay at Vallorbe. I visited it for a few hours only on two consecutive days, August 2nd and 3rd, and on the second occasion

* There is considerable mystery regarding these lakes. It is said that the *visible* sources of supply are quite inferior to the amount discharged at the *entonnoirs*, pointing to the possibility of land springs at the bottom. As there is no other outlet, the district would be flooded should any mishap occur to the *entonnoirs*. It is also said that, notwithstanding the great difference in the level, the water discharged takes many hours before it re-appears at the "Source," as tested by the introduction of colouring matter. On these points the Guide Books give no information.

collecting operations were cut short by violent thunderstorms. This locality is specially interesting, because the water-condition—a foaming torrent in a deep gorge—is not to be found elsewhere for a long distance, and those insects requiring such a condition naturally congregate at this point.

In all only 37 species were taken, a disappointing number for a Swiss excursion; and of these the only ones of importance (outside questions of local interest) are *Drusus mixtus*, Pict., *Rhyacophila philopotamoides*, McLach. (new for Switzerland), and *Rhyacophila aurata*, Brauer.

PHRYGANEIDÆ.

NEURONIA RUFICRUS, Scop.—*Tourbière* at the base of the Dent de Vaulion, near Le Pont, 1 ♂; very late.

PHRYGANEA GRANDIS, L.—A few at Le Pont, concealed in the chinks of the bark of trees; one in my bedroom. The only female is not larger than the male. This appears to be a scarce insect in Switzerland.

PHRYGANEA VARIA, F.—Le Pont, 1 ♂.

LIMNOPHILIDÆ.

LIMNOPHILUS RHOMBIUS, L.—One mutilated ♀ at Le Pont.

LIMNOPHILUS LUNATUS, Curt.—Le Pont, 1 ♀.

LIMNOPHILUS EXTRICATUS, McLach.—Near Rocheray, Lac de Joux, 1 ♂.

LIMNOPHILUS GRISEUS, L.—Same locality, 1 ♀.

STENOPHYLAX (HYPOCHIONA) PICICORNIS, Pict.—Sloping meadow at the N.E. end of Lac Brenet, 3 ♂, 1 ♀.

DRUSUS MIXTUS, Pict.—Source de l'Orbe, 1 ♂, 1 ♀. This little-known species is probably peculiar to the Jura. I had already seen it from the "Source" (*cf.* Rev. and Synops., p. 173), and it was the thing in particular I hoped to obtain during my visit. Unfortunately I did not recognise the examples until my arrival home; had I done so my plans would probably have been modified.

PELTOSTOMIS SUDETICA, Kol.—3 ♂, 1 ♀, with *S. picicornis*.

SERICOSTOMATIDÆ.

SERICOSTOMA PEDEMONTANUM, McLach.—At streamlets; abundant along the road-side between Vallorbe and Le Day. The individuals belong to a race in which the two branches of the penis-sheaths are widely divergent, and the upper only slightly longer than the lower.

CRUNGCIA IRBORATA, Curt.—Source de l'Orbe, 3 ♂.

LEPIDOSTOMA HIETUM, F.—Source de l'Orbe, 4 ♀.

LEPTOCERIDÆ.

MOLANNA ANGUSTATA, Curt.—Lac de Joux at Le Pont, 1 ♀.

ODONTOCERUM ALBICORNE, Scop.—Common at streamlets, especially at one running into a corner of the Lac de Joux at Le Pont.

LEPTOCERUS CINEBEUS, Curt.—Lac de Joux and Lac Brenet, abundant. The race here represented is that in which the anterior wings in both sexes are brownish, the only marking being a pale spot at the arculus.

LEPTOCERUS ATERRIMUS, Steph.—Lac de Joux at Le Pont, common. Apparently exclusively of the form or race in which the anterior wings are wholly reddish-brown (*perfuscus*, Steph., *tineoides*, Brauer), and of somewhat large size. This was the first occasion on which I had seen this common species unrepresented by the type-form.

MYSTACIDES AZUREA, L.—Lac de Joux, not common.

MYSTACIDES LONGICORNIS, L.—Lac de Joux at Le Pont, and Lac Brenet, abundant.

Not more than one in twenty of the individuals have any trace of the dark fasciæ on the anterior wings. The majority have these wings wholly lightly clothed with yellowish pubescence, and with a darker pterostigmatic clouding; the hind-wings paler; the antennæ with a dark mark only at the sutures (sometimes absent). This form (which shows an approach towards *M. monochroa*, McLach.) occurs elsewhere, and is almost worthy of a varietal name, but it seems to be linked to the banded form (*quadrifasciata*, F.) by gradations.

ADICELLA FILICORNIS, Pict.—Source de l'Orbe, 1 ♂.

CEOTIS OCHRACEA, Curt.—Lac de Joux, near Le Sentier, 1 ♂.

HYDROPTILIDÆ.

OXYETHIRA COSTALIS, Curt.—Lac de Joux, common, but only one ♂ brought home.

HYDROPSYCHIDÆ.

HYDROPSYCHE PELLUCIDULA, Curt.—Cascade du Day and Source de l'Orbe, a few.

PHILOPOTAMUS LUDIFICATUS, McLach.—Abundant at a streamlet running into the Lac de Joux at Le Pont; also elsewhere.

DOLOPHILUS COPIOSUS, McLach.—Source de l'Orbe, not common.

CYENUS TRIMACULATUS, Curt.—Lac Brenet, 1 ♂.

TINODES DIVES, Pict.—In great profusion at rapid streamlets; also Source de l'Orbe.

CHIMARRHA MARGINATA, L.—One example on shore of Lac de Joux.

RHYACOPHILIDÆ.

RHYACOPHILA TORRENTIUM, Pict.—Source de l'Orbe, 1 ♀.

RHYACOPHILA DOERSALIS, Curt.—Source de l'Orbe, 2 ♂.

RHYACOPHILA PRÆMORSA, McLach.—Source de l'Orbe, 2 ♂.

RHYACOPHILA AURATA, Brauer.—At a rapid part of a streamlet having its source at a *tourbière* at the foot of the Dent de Vaulion, a tributary of the Orbe, running parallel with the road from Le Pont to Vallorbe, 1 ♂. I was surprised to find this insect in the Jura. Its home appears to be in the Austrian Alps, but it is already known as Swiss. The example has the anterior wings less bright than in those from Austria, and more reticulated with darker markings.

RHYACOPHILA VULGARIS, Pict.—6 ♂, 1 ♀, Source de l'Orbe. One very large ♂ from La Lionne at L'Abbaye, Lac de Joux.

RHYACOPHILA PHILOPOTAMOIDES, McLach.—1 ♂ at the same stream as *Rh. aurata*. New for Switzerland. A widespread species, but so far never found in abundance.

RHYACOPHILA TRISTIS, Pict.—Abundant at rapid streamlets; also Source de l'Orbe.

GLOSSOSOMA BOLTONI, Curt.—Source de l'Orbe, 1 ♂.

SYNAGAPETUS DUBITANS, McLach.—Meadow at N.E. end of Lac Brenet, 2 immature ♀.

PLANIPENNIA.

Aphidivorous *Planipennia* were excessively scarce. The results of beating hundreds of fir trees, &c., were seven individuals of *Hemero-bius* (in five species), and two individuals of *Chrysopa* (in two species), and it is believed that every specimen seen was captured!

PANORPA GERMANICA, L.—Fairly common; the var. *apicalis*, Steph., is frequent.

PANORPA COMMUNIS, L.—Two only. P. VULGARIS, Imhoff.—Common. I am obliged to consider the question of the specific identity or otherwise of *communis* and *vulgaris* as still *sub judice*. An inspection of considerably over 100 examples in my collection from varied localities leaves me in doubt where one form ends and the other begins: but wherever I have seen the two *alive* in the same locality their distinctness has seemed to be practically certain.

ASCALAPHUS COCCAJUS, W. V.—On the side of the Dent de Vaulion, near Le Pont, 1 ♀.

OSMYLUS CHRYSOPS, L.—Source de l'Orbe, common.

HEMEROBIUS PELLUCIDUS, Wlk.—One out of a fir tree on the ridge above Lac Ter.

H. MICANS, Oliv.—One. H. HUMULI, L. P.—Two ♀. H. STRIGOSUS, Zett. (*limbatus*, Wesm.).—One. H. PINI, Steph.—Two (I think it probable that *phaleratus*, Schnd., and *punctatus*, Gözsy, represent a larger form of this species).

CHRYSOPA PRASINA, Burm. (*aspera*, Wesm.), and CH. VULGARIS, Schnd.—one of each.

PSEUDO-NEUROPTERA.

PSOCIDÆ.

It had never been my lot to visit a district in which these insects were so poorly represented. They were carefully looked for, and yet the few noticed below were all that could be found, with the exception of *Elipsocus unipunctatus*, which was tolerably common.

PSOCUS FASCIATUS, F. (2); PS. LONGICORNIS, L. (1). STENOPSOCUS (GRAPHOPSOCUS) CRUCIATUS, L. (1). ELIPSOCUS ABIETIS, Kolbe (2); E. (MESOPSOCUS) UNIPUNCTATUS, Müller, common.

PERLIDÆ.

Individuals of *Leuctra* and *Nemoura* were abundant at small streamlets, and on the lake sides, but the larger caudate forms were very scarce. Mr. Morton has kindly looked over the materials, and to him I am indebted for most of the determinations.

DICTYOPTERYX INTRICATA, Pict.—At the spot where La Lionne bursts out of the rock at L'Abbaye. 1 ♂. I am quite disposed to agree with Mr. Morton as to the identification, but the apical neuration is much more regular than is usual in the species, and the elevation is less than that at which it is usually found in Switzerland.

CHLOROPHELA RIVULORUM, Pict., 3 ♀; CH. GRAMMATICA, Scop., 1 ♀.

ISOPTERYX TRIPUNCTATA, Scop.—Two examples.

LEUCTRA.—Two or three species at present undetermined.

NEMOURA VARIEGATA, Oliv.—Common; N. MARGINATA, Pict., Morton.—Common; N. LATERALIS, Pict.—One only; N. INCONSPICUA, Pict.—A few.

EPHEMERIDÆ.

These have been already recorded by the Rev. A. E. Eaton; cf. Ent. Mo. Mag. (2), ix, pp. 265, 266.

ODONATA.

A glance at the short list here given suffices to show that the district is apparently very poorly provided with dragon-flies.

LEUCORRHINIA ALBIFRONS, Burm.—A few at Lac Ter, the first occasion on which I had seen it alive.

SOMATOCHLORA METALLICA, V. d. L.—Lac Brenet, abundant.

CORDULIA ÆNEA, L.—Lacs de Joux and Brenet, common.

ÆSCHNA JUNCEA, L.—Vallée de Joux, and elsewhere, occasional.

ÆSCHNA GRANDIS, L.—Not unfrequently seen, but not captured.

CALOPTERYX VIRGO, L.—Roadside between Le Pont and Vallorbe.

ENALLAGMA CYATHIGERUM, Charp.—In great abundance at the lakes.

AGRION PULCHELLUM, V. d. L.—Lac Ter, abundant.

LESTES SPONSA, Hansm.—Lac Ter, common.

In addition to the above, a Corduline (probably *S. arctica*, Zett.) was often seen in the mountains; a Gomphine (almost certainly *Onychogomphus forcipatus*, L.) was once seen on the shore of Lac Brenet; and a rather small *Æschna* (which I suspect was *Æ. affinis*, V. d. L.) was several times observed in the mountains.

Lewisham, London:

January, 1899.

ON THE BRITISH SPECIES OF THE DIPTEROUS GENUS *LOXOCERA*, Mg. (FAM. *PSILIDÆ*), WITH THE DESCRIPTION OF A NEW VARIETY.

BY ERNEST E. AUSTEN.

While collecting last summer in the Highlands of Scotland, Col. Yerbury met with what appears to be a melanic variety of *Loxocera aristata*, Pz. (*elongata*, Mg., Schin.). After a most careful examination, I have entirely failed to discover in either sex any structural difference whatever from the species in question, but since the form may as well receive a name, I propose to term it in honour of its discoverer.

LOXOCERA ARISTATA, var. *YERBURYI*.

The new variety may be characterized as follows:—

Loxocera aristata, var. *Yerburyi* (var. nov.).—Differing from the typical form in that the *scutellum* and *dorsum* of the *thorax* are wholly black; pleurae in ♂ shining black, except a somewhat ill-defined ferruginous area extending from the

- Small species (σ , under 5 mm. (2.3 lines); φ , to extremity of ovipositor, 6 mm. (2.75 lines) in length); abdomen reddish-yellow at the base beneath; cheeks yellow, the anterior margin narrowly, the posterior border broadly black *fulviventris*, Mg.
3. Front and scutellum black *nigrifrons*, Macq.
 Front, except a black median triangle (and margins of the eyes also in *L. sylvatica*, Mg.), and scutellum red 4.
4. Face with shining black median stripe; arista almost bare; smaller and slenderer species (5.5 mm. (2.5 lines) to (in the φ) 6.6 mm. (3.3 lines) in length) *sylvatica*, Mg.
 Face without black median stripe; arista shortly, but distinctly plumose; larger and robuster species (6 mm. (3 lines) to (in the φ) 8.3 mm. (4 lines) in length) *albiseta*, Schrk.
 (syn. *ichneumonea*, F.,—Mg., Schin.—? Linn.).

One of the largest, though apparently not the commonest, of our British species of *Loxocera* is *L. aristata*, Pz. Owing to its size, the elongated abdomen of the φ , laterally compressed towards the tip, is more noticeable in this than in the other species. The Museum possesses specimens from Loch Rannoch, Perthshire, June 22nd—July 4th, and Nethy Bridge, Inverness-shire, August 13th (*Yerbury*); from Sutton Coldfield, Warwickshire, August 11th to 17th (*Bradley*); and from Lyndhurst Road, New Forest, August 7th, and Tarrington, Herefordshire, August 14th (*Yerbury*).

Loxocera fulviventris, Mg., on the other hand, is the smallest, as well as apparently one of the rarest of our native species. In the σ , owing to the great length of the third joint, the antennæ are longer than, or at least as long as, the head and thorax together. At present this species, which was introduced as British by Mr. G. H. Verrall in 1894, on the strength of a φ captured in 1892 by the Rev. E. N. Bloomfield at Guestling, near Hastings (*cf.* Ent. Mo. Mag., 1894, pp. 76, 145), is represented in the Museum collection by only two examples—a σ from Ledbury, Herefordshire, August 17th, 1897, and a φ from Tarrington, in the same county, August 12th, 1897—both taken and presented by Lieut.-Col. Yerbury. The species seems to be scarce on the Continent also; it was described by Meigen "from Baumhauer's collection," without the mention of any locality; Macquart ("Diptères," II, p. 374) writes "From Germany?," while Schiner ("Fauna Austriaca Diptera," II, p. 197) remarks:—"Very rare; I took it on a single occasion, probably in the mountain region (*Hochgebirge*)."

Loxocera nigrifrons is included in Verrall's "List" in italics, as requiring confirmation, and Mr. Verrall informs me that its insertion was due to a record in this Journal by Mr. C. W. Dale (Ent. Mo. Mag., vol. xx, 1884, p. 214), who states that specimens were "Taken by Mr. J. C. Dale at Lyndhurst, on June 1st, 1831, and July 7th, 1837." Mr. C. W. Dale attributes the species to Meigen, and gives "*hortoniensis*, Curt. Guide," as a synonym; Verrall follows Dale in quoting Meigen as the author of the species, but adds, in parenthesis, "? Mcq." As a matter of fact, *Loxocera nigrifrons* was described by Macquart ("Diptères," II, p. 374), and not by Meigen at all, while *hortoniensis* is clearly a misprint for *hantoniensis* (*cf.* Curtis, "A Guide to an Arrangement of British Insects," 1837, p. 269—where the name is attributed to Dale). Through the courtesy of Mr. C. W. Dale, I have

been enabled to inspect his specimens of *L. ngirifrons* (a ♂ and ♀ in bad condition), and I have much pleasure in stating that the identification is undoubtedly correct. This is, perhaps, not suprising, since Mr. Dale informs me that they were named by the late A. H. Haliday.

Next to *Loxocera nigrifrons*, Macq., and *L. fulviventris*, Mg., the least common British species (so far as it is possible to judge from the present state of the Museum collection) appears to be *L. sylvatica*, Mg., of which we possess eight examples, all taken at various localities in S. Devon (Bickleigh Vale, Shaugh Bridge, Ivybridge, and Plymbridge), on dates ranging from April 20th to May 19th (collected and presented by Lieut.-Col. Yerbury).

The commonest British species of *Loxocera* is *L. albiseta*, Schrk., which in size ranks next to *L. aristata*, Pz. In this species the abdomen of *both* sexes is cylindrical, since, except at the extreme tip (the actual ovipositor), that of the ♀ is not laterally compressed, as it is in *L. aristata*. Of *L. albiseta* the Museum possesses some two dozen specimens, taken at various localities in the Western, Southern, and Eastern (Wicken Fen, Cambridgeshire) counties of England, on dates ranging from June 26th to September 23rd (*Lieut.-Col. Yerbury*; *A. Piffard*; *E. E. Green*).

A search through the volumes of the "Zoological Record" shows that since the date of Schiner's Catalogue (1864) only three European species of *Loxocera* have been described, viz.:—*maculata*, Rond. (Bull. Soc. Ent. Ital., viii, 1876, p. 193), from Italy; *marginata*, Rond. (*loc. cit.*, p. 194), from the Apennines; and *atriceps*, Bigot (Bull. Soc. Ent. Fr. (6), vi, 1886, p. lxxxv), from Chapuy, near Mt. Blanc. Whether any of these are synonyms of the five species previously described and tabulated above, or whether any or all of them will eventually prove to be members of the British fauna, are matters for future investigation.

British Museum (Natural History),
Cromwell Road, London, S.W.:
January 21st, 1899.

TWO SPECIES OF *EPHEMERIDÆ* NEW TO BRITAIN.

BY C. A. BRIGGS, F.E.S.

During the stay of Messrs. King, Porritt and myself at Camghouran—as Camachgouran is now spelt—from June 7th to 21st last year, I collected specimens of such of the *Ephemeridæ* as came in my way, but, owing probably to the very cold weather shortly before our visit, they were not so numerous as I had hoped. We were in fact too early for the majority of species.

I have recently submitted my specimens to the Rev. A. E. Eaton who has most kindly not only named them for me but furnished me

with notes, some of which I have embodied in this paper. Among the seven species represented two prove to be new to the British list.

(1.) *Leptophlebia Meyeri*, Etn., which had previously been known only from Switzerland and the Netherlands was described from Swiss specimens of the ♂ in 1884 [*cf.* Eaton: "Revisional Monograph of the *Ephemeridæ*," Trans. Linn. Soc. Lond. (2) Zool., vol. iii, pp. 95 and 320, pl. xi, 17a.]

The fore-wings of the subimago are uniformly light grey; hind-wings impure yellowish-white.

Mr. Eaton says that the paleness of the hind-wings of the subimago suggests that *L. Meyeri* may possibly prove to be identical with the Linnean *Ephemera cespertina*, a species to be re-discovered in its original locality.

I found the species on the moor above the Black Wood near a little lochan called Rusg-a-Bhiora, which is marked on the Ordnance Map and also on the map in the "Entomologist," vol. xvii, p. 145. This lochan is 1,226 feet above sea level, Loch Rannoch itself being only 668 feet. They were not flying over the lochan itself, but fluttering over the boggy moor immediately about it, and as I walked along they rose in countless swarms. I secured a good representative series as I saw it was a species I had not met with before, but regret that my acquaintance with the *Ephemeridæ* was not sufficient to enable me more fully to appreciate its interest.

(2.) *Ameletus inopinatus*, Etn., both genus and species new to Britain.

This species, of which single examples were discovered by Mr. McLachlan in 1885 in the Schwarzwald and in 1883 in the Vosges, was described by Mr. Eaton in the "Revisional Monograph," p. 307, pl. lxx, 13 (♂ genitalia) [1887]. *Ameletus* belongs to the third group of the *Ephemeridæ*, its place in our list being before *Siphilurus*.

On the afternoon of the 8th June I beat a solitary specimen of the ♂ imago from a bush on the shore of Loch Rannoch just where the Dall burn falls into the Loch.

The other species of *Ephemeridæ* taken during our stay will be mentioned by Mr. King in a paper on the Neuropterous results of our visit.

Rock House, Lynmouth :
February 13th, 1899.

Precocity of Gracilaria syringella, Fab., or hibernation?—The question is suggested by my seeing a moth of this species that came in at a window of my house this morning about 10 a.m., when the out-door temperature was 54° F. in the shade. The specimen was in good condition.—A. E. EATON, Woodlands, Seaton, Devon : February 14th, 1899.

Hedya Servillana, Dup., bred from woody gall of *Cecidomyia salicis*.—I gathered the galls on willow twigs in the early spring with the intention of trying to breed the Cecids., and stuck the twigs in a flower pot containing damp sand, placing over them a lamp chimney, the upper end of which I had closed with a piece of muslin. I kept them in a small greenhouse, and the high temperature very possibly brought the insects out before their usual time, for by the beginning of April the Cecids. and a minute Hymenopterous parasite began to appear. One morning I was surprised at finding an empty pupa case, much larger than those of the Cecids., protruding from one of the galls, and upon searching the twigs for its late inhabitant, found the above moth, which I pinned and labelled.

I have no doubt that the Cecid. is the maker of the gall, which, however, is made use of by other insects for various purposes, since a lot of tiny caterpillars hatched out from eggs concealed in cracks in the galls which I collected. Unfortunately I did not succeed in rearing these larvæ, so cannot say to what species they belonged.—JAS. E. COLLIN, Sussex Lodge, Newmarket: February 15th, 1898.

Second brood of Abraxas grossulariata.—Last month a friend sent on to me a letter which had just reached him from a gentleman unknown to both of us, which read as follows: "During the last fortnight I have had some specimens of *Abraxas grossulariata* hatched from pupæ gathered off currant trees at the end of November. I shall feel favoured if you can inform me whether it is a usual occurrence with this insect to be double-brooded. The specimens appear to be about two-thirds of the usual size.—Nathan Heywood, Manchester, January 6th, 1899." Upon my asking to see specimens of this very unusual emergence, and also, if possible, some of the pupæ or pupa-skins, Mr. Heywood forwarded at once a setting-board with two specimens of the moth upon it, of which the bodies were scarcely dry; also three pupæ, two of them dead, but the third having the tail-skin thrust off and the abdomen soft. These pupæ are more noticeably smaller than ordinary than are the moths. Knowing so well the habits of the larva of this species, of hibernating, when very small, in any curled dead leaf, and also that the efforts of our most skilful breeders of moths to obtain a second brood of this species in the season have failed, I cannot but regard this piece of evidence of the unusual character of last season's weather as of great interest. I may add that *A. grossulariata* does not seem to be double-brooded even in the South of Europe.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, February 3rd, 1899.

Prosopis dilatata and other Aculeate Hymenoptera at Ventnor.—On the 25th of July last I went, accompanied by my friend, Mr. H. Elgar, to look for *Aporus unicolor* at Steephill Cove, where it was taken in 1871 by Mr. Rothney. The day was very hot, but insects were scarce, and only a few *Osmia spinulosa* were first met with. On arrival at Steephill we searched for some time without success, but at last our efforts were rewarded by finding a few *Aporus* on *Umbelliferae*. We managed altogether to secure eight specimens, four of each sex. On the same Umbelliferous plants we also found *Prosopis dilatata* (1 ♀, 2 ♂); but, unfortunately, we did not suspect what they were until we were on our return journey. The only other capture worth recording was *Salix obtusiventris* ♀. About a week later I took *Crabro Panzeri* ♀ at Sandown Bay.—G. E. FRISBY, Chilton House, Hatchlands Road, Redhill, February 2nd, 1899.

Xylomyia maculata, Fab. (*Diptera*), bred, from the New Forest.—While searching for *Coleoptera* near Denny Lodge in the New Forest, on the 29th of June in the summer last past, I came across a number of Dipterous pupæ, in very rotten wood, in a hollow stump. The tree was, I believe, oak, and the consistency of the rotten portion in the crevices of which the pupæ were lying almost huddled together may be likened to that of rich wedding-cake. I brought home about a dozen of these pupæ, and from them there emerged on the 8th of July several flies which were unknown to me then, but which I made out from Westwood, *Introd.* ii, pp. 533—534; and figs. 127, 11 (pupa of *Sargus*), and 12, to be *Subula* (*Xylomyia*) *maculata*, Fab. Mr. Verrall has kindly informed me that this identification is correct, and that the insect is of great rarity, at least in collections.

There were, however, a great number of the pupæ, or rather pupa cases, for the outside covering is that of the larval skin, which bursts at the end, just as figured for *Sargus*, the true pupa being extruded a little way. I bred eleven specimens, being all I believe that I brought home, simply keeping them in a tin. The flies continued to emerge for about a week.

Mr. Austen is, I understand, about to publish some remarks on the classification of the genus *Xylomyia*. The species in Verrall's list are three: *X. maculata*, F.; *varia*, Meig; *marginata* Meig. The two former being printed in italics as needing confirmation as British, not having appeared since Hope's capture recorded by Westwood.—H. S. GORHAM, Shirley Warren, Southampton: *January 18th*, 1899.

Spilomyia speciosa, Rossi, in the New Forest.—I may mention that I have been in the habit of taking this beautiful fly every summer for many years. It occurs singly or in pairs about Midsummer round large hollow trees in various parts of the New Forest.—ID.

Brachypalpus bimaculatus Mcq., in the New Forest, &c.—At the meeting of the Birmingham Entomological Society held on the 19th September last, Mr. R. C. Bradley exhibited a specimen of this Dipteron taken at Sutton, and remarked that almost the only other captures he knew of were two taken by himself and Mr. Wainwright in Sherwood Forest in 1892. It is certainly not a common insect, but has been taken in several localities in the vicinity of decaying oak trees. In the new collection of British *Diptera* at the Natural History Museum, South Kensington, there are five specimens, of which four were taken in the New Forest in 1894, and one at Ledbury, Hereford, in 1895; all being presented by Col. Yerbury; and last year I was also fortunate enough to take four specimens in the former locality. Two of these were taken flying about Portugal Laurel blossom, and their resemblance both on the wing and at rest to some of the *Andrenidæ* is so remarkable that I nearly turned the first one out of my net before noticing the difference.—FREDK. C. ADAMS, 50, Ashley Gardens, S.W.: *January*, 1899.

Coleoptera at Colchester.—During the past year we have taken several rare and many interesting species of *Coleoptera*—nearly all in the first half of the year—the autumn collecting proving very unproductive. Among our captures are *Notiophilus rufipes*, a few, in dead leaves; *Badister sodalis*, one, in a damp spot; *Stenolophus*

Skrimshiranus and *Acupalpus consputus*, in muddy places on the coast, local; *Pterostichus inæqualis*, in flood refuse; *Taphria nivalis*, *Bembidium Clarki*, in ditch rubbish; *Lebia chlorocephala*, in moss, etc., near broom bushes; *Pelobius tardus* and *Cnemidotus impressus*, in a pond; *Hydroporus halensis*, several, in shallow pools, in a ballast pit; *Hydrobius oblongus*, *Paracymus nigroæneus* and *Berosus spinosus*, in brackish ditches on the coast; *Ochthebius exaratus*, one specimen; *Microglossa gentilis*, in nests of *Lanius fuliginosus*, together with *Quedius brevis*, *Amphotis marginata*, and *Rhizophagus perforatus*, and also a few examples of the rare *Hister marginatus* (Mr. Champion, who determined the species for me, says that he believes it has not hitherto been regarded as an Ant's nest beetle—we also took one specimen from a nest of *Formica rufa*); *Oxypoda hæmorrhœa*, *Heterothops 4-punctula* (one), *Leptacinus formicetorum*, *Dendrophilus pygmæus*, and *Monotoma formicetorum*, all in nests of *Formica rufa*; *Calodera riparia* and *nigrita*, rare, in damp places; *Myrmedonia Hawthorthi*, one specimen, running across a pathway; *Homalota immersa*, under fallen boughs; *Megaronus inclinans*, among dead leaves; *Mycetoporus longulus* and *angularis*, in moss, dead leaves, etc.; *Quedius attenuatus*, in flood refuse; *Ocyrops ater*, under stones, seaweed, etc., on the coast; *Philonthus punctus*, one or two in muddy places on the coast; *Xantholinus tricolor*, under seaweed, etc.; *Stenus incrassatus*, in a ballast pit; *Trogophloeus foveolatus*, in ditch rubbish, on the coast; *Deleaster dichrous*, on the wing; *Bryaxis sanguinea*, in damp rubbish; *Colon serripes* (one), by evening sweeping; *Saprinus virescens* (two); *Dacne humeralis* and *Cyrtotriplax bipustulata*, in fungi; *Thalycra sericea* (one), by evening sweeping; *Tiresias serra* (one); *Elmis cupreus*, a fine series, under stones in a small stream; *Gnoringus nobilis* (one), in a garden; *Throscus carinifrons*, several, by evening sweeping; *Athous longicollis*; *Cyphon padi*, on the margins of a pond; *Malachius marginellus* and *Dolichosoma lineare*, on coast grasses, a fine series of each; *Callidium variabile*, two or three from a dead tree: *Saperda carcharias* (one), *Orsodaena cerasi* and *lineola*, both very scarce; *Zeugophora flavicollis*, four only, owing to the recent growth of dense under-wood; *Cryptocephalus 6-punctatus*, one only, on birch; *Crepidodera nitidula*, scarce, with the *Zeugophora*; *Orchesia micans* and *Hallomenus humeralis*, from fungi; *Conopalpus testaceus* (two); *Eryx atra* (one), under ash bark; *Mordellistena brunnea* and *humeralis*, rare, on flowers; *Metæcus paradoxus* (one), when beating for larvæ; *Tropiphorus carinatus* and *mercurialis*, under leaves, near "Dog mercury"; *Orchestes ilicis*, *rusci*, and *stigma*, on various trees; *Orthochates setiger*, in moss; *Bagous cylindrus* (one), by sweeping; *B. lutulentus* and *limosus*, both very rare, in ditch rubbish; *Poophagus nasturtii*, in tufts of rushes; and *Brachytarsus varius* and *Rhynchites pubescens*, beaten from oak.—BERNARD SMITH HARWOOD, 94, Station Road, Colchester: January 26th, 1899.

Phytosus nigriventris, Chev., in Flintshire.—It may be interesting to record that I met with this species, now definitely placed in the British list (Ent. Mo. Mag., Jan., 1899, p. 1), in profusion on the shore at Prestatyn in Flintshire, in April, 1895. Thinking it to be nothing more than a large and rather distinctly marked form of

* It is not included in Wasmann's "Krit. Verz. der Myrmekoph. Arthropoden" (1894), who, however, records the closely allied *H. ruficornis*, Grimm (= *myrmecophilus*, Muls.), from the nests of *Lasius fuliginosus*.—G. C. C.

P. balticus, I took very few of them. Mr. Champion, however, has seen some of the specimens and pronounces them to be undoubtedly *P. nigriiventris*, Chevr. This, taken with the other two localities where the species has been discovered—Mablethorpe and the Chesil Bank—suggests that its range round our coast is extensive, and no doubt it has often been passed over as *P. balticus*. All I took were under seaweed, chips, &c., lying in the sand above high-water mark.—W. E. SHARP, Ledsham, Cheshire: January, 1899.

Review.

NOTES AND OBSERVATIONS ON SOME VICTORIAN COCCIDÆ: by JAMES LIDGETT. (Reprinted from "The Wombat"), Geelong, Australia. 1898. 15 pp. 8vo, 2 Plates.

This brochure, which it is modestly stated "is not intended as anything more than a compilation of disconnected notes on the habits, distribution and general character of the species which it includes," is deserving of notice, not only for these reasons, but for its pertinent and scientific character generally as well as for the very good figures on the lithographic plates from the author's drawings, and the synoptical list of Families and Genera, in which the system of the late W. M. Maskell is adopted. The Notes include a new species of underground *Dactylopius* (*D. similans*, Lidgett), *Eriococcus eucalypti*, Maskell, *E. Tepperi*, Maskell, *Brachyscelis munita*, Schrader, *B. urnalis*, Tepper, *B. strombylosa*, Tepper, and two other species of *Brachyscelis* unnamed, all of these and one or two others being figured.

It is gratifying to see that the Coccids of Australia, a country in which they particularly abound, are being studied by competent observers of them in their living conditions, which must essentially conduce to obtaining a knowledge of the many varied forms special to the country.

The author intimates that he intends to continue a course of "Field Notes" on Victorian Coccidæ.—J. W. D.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: December 19th, 1898.—Mr. P. W. ABBOTT, Vice-President, in the Chair.

Mr. R. C. Bradley exhibited a box containing a large number of *Tortrices* and various rare *Lepidoptera*, presented by Dr. P. B. Mason to the type collection of the Society. Mr. A. H. Martineau, a specimen of *Sphinx convolvuli* taken at Solihull recently. Mr. R. C. Bradley, *Chrysotoxum sylvarum* and *C. elegans*, both taken in the New Forest last Whitsuntide. Mr. A. H. Martineau, *Tachytes pectinipes*, ♂, from Cannock Chase, and ♀ from Nevin, N. Wales; also *Salix exaltatus*, ♀, *Nysson dimidiatus*, ♀, and *Entomognathus brevis*, ♀, all from Nevin. Mr. P. W. Abbott, a case containing a number of fine varieties of *Lepidoptera*, chiefly taken by himself during 1898; amongst others were the following:—a specimen of *Vanessa*

Io from S. Devon, which was small, dark, and smoky looking, the disc of the wings appearing as if scraped, although all the scales were on, the scales themselves showing dull and colourless under the microscope; *Nonagria arundinis*, a fine, dark brown bred specimen from Norfolk; *Venilia maculata*, one from Wyre Forest, with dark brownish-yellow ground colour; *Rumia luteolata*, one from S. Devon with dark mark right along costa of fore-wings; *Hydrilla palustris*, one of the dark so called black ones from Wicken; *Larentia viridaria*, one taken by Mr. A. J. Hodges in S. Devon, small and pale, with markings inconspicuous, the bar on fore-wings narrow and broadly edged with white; *Zygana filipendula*, one with the outside spots confluent, also taken in S. Devon by Mr. A. J. Hodges; dark and obscurely marked *Zonosoma linearia*, bred from Epping Forest, by Mr. T. P. Mutch; *Asphalia diluta* from Wyre Forest, one small and dark, with outer half of outer band on fore-wings missing, one with the two bands confluent across discoidal spot on right wing only. Mr. G. W. Wynn also a nice series of varieties, including a *Fanessa urticae* from Teignmouth, with markings between black spots on costa white, discal spots small, and hind marginal band edged with white; *Tryphæna comes* from Hopwas Wood, a beautiful specimen with strongly marked transverse lines on fore-wings; dark *Polia chi* from Chatsworth, &c.—COLBRAN J. WAIWRIGHT, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *February 3rd, 1899.*

Dr. Sharp exhibited a number of stag beetles (*Lucanida*) from various parts of the world, calling attention to the trimorphism conspicuous among the males of many species. They differ not only in size, but also in the form of the mandibles, and can be usually placed in three well-marked groups in each species. He also exhibited some bees of the genus *Koptorthosoma* from Ceylon, in which in the female a cavity is formed in the anterior end of the abdomen by an involution of the skin. The abdomen is pressed so close against the thorax that in the normal position this cavity is invisible, but it can be seen by bending down the abdomen or by cutting it off. The cavity varies in form in different species, but is found throughout the genus in the female, and always contains a number of large *Acari*. It is not known whether these parasites have any connection with the development of the structure in question. Dr. Harmer, an Amphipod Crustacean of the genus *Niphargus*, found in a well at Norwich. This genus is only known to occur in deep wells, and in the complete absence of pigment from all parts of the body, including the eyes, it resembles a cave-animal.—L. DONCASTER, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *November 24th, 1898.*—Mr. J. W. TUTT, F.E.S., President, in the Chair.

Mr. Montgomery exhibited a photograph by Mr. Clarke of an ovum of *Hesperia comma*; it was smooth, without reticulations. Mr. Adkin, two specimens of *Dicranura bifida*, taken this year in his own garden on the trunk of a poplar tree. Mr. Tutt, additional local forms of *Zygana* from M. Oberthür:—(I) *Z. trifolii*, 1,

a mountain form ; 2, an Algerian form, v. *syracusæ* ; 3, a coast form ; 4, a large marsh form from Rennes ; and 5, series from the French coast opposite the Channel Islands. (II) *Z. flilipendulæ*, 1, var. *dubia* form ; 2, a five-spotted form from the Pyrenees. (III) Series of *Z. trifolii* from Waxham, for Mr. Bacot, and from South Wales, for Capt. Robertson ; and contributed notes. Mr. Milton, a portion of a stone in which an *Odynerus* was found alive with its cocoon.

December 8th, 1898.—The President in the Chair.

Mr. Bliss, of Hastings ; and Mr. Sich, of 65, Barrington Road, Chiswick ; were elected Members.

Mr. Carpenter, exhibited some fourteen bred varieties of *Melitæa Cinzia*, the only ones out of some 200 that were worthy of note, and not one extreme in form. Mr. Brooks, of Rotherham, *Apamea oculus*, many varieties, *Euchelia jacobææ*, with a pink flush, a brood of *Amphidasys betularia*, containing normal, light, v. *Double-dayaria*, and fine intermediate examples, one being very light and semi-transparent, *Triphena fimbria*, in great variety, and *T. janthina*, rich in colour. Rev. E. Tarbat, cocoons of *Plusia moneta* found in a friend's garden. Mr. Adkin, *Xylina socia* (*petrificata*), *Calocampa vetusta*, *C. exoleta*, *Agrotis segetum*, *Miselia oxyacanthæ*, and *Cidaria siderata*, all typical of the forms from Co. W. Meath, Ireland. Mr. South, three examples of *Abraxas grossulariata*, bred from larvæ fed on *Sedum* ; most of the larvæ died, and only seven imagines emerged ; also a suffused var. of *Melanippe sociata*, comparable to the Hebridean form. Mr. Andrews, a Noctuid from Darn, supposed to be an extremely dark blackened form of *Caradrina cubicularis*. Mr. Lucas read his recent notes and observations on Dragon-flies, illustrating his remarks by very fine series of slides made by himself.

January 12th, 1899.—The President in the Chair.

Mr. West presented to the Society specimens of 125 species of *Hemiptera-Heteroptera* to form a nucleus for a reference collection. Mr. Carpenter exhibited specimens of *Apatura Iris*, bred from New Forest larvæ, with notes on their hibernation. He and other members complained bitterly of the damage which was being done by some of the local dealers, who used ropes and a sail with stout cudgels, effectually smashing and destroying the fallows. Mr. Tutt, further specimens of *Zygane* received from M. Oberthür, of Rennes, and read notes on them. Mr. Adkin, specimens of *Cymatophora octogesima* (*ocularis*), bred from Colchester. Mr. Lucas, recent uninvited visitors to Kew Gardens : *Periplaneta americana*, *P. australasia*, and *Panchlora maderæ* from the Belgian Congo ; *Anisolabis annulipes*? from Penang ; and *Phyllodromia* sp. from Zamba, British Central Africa. Mr. Moore, ♂ and ♀ larvæ, larval cases, pupæ and ♀ imagines of the large Psychid moth, *Æketicus Kirbii*, received from Antigua, West Indies, and contributed notes. Mr. Malcolm Burr, a wonderfully clever imitation of a grasshopper in porcelain from China, and a case containing a species from each group in the various sections of the *Orthoptera*, to aid in illustrating Mr. Edwards' paper, together with various species showing protective resemblance. Mr. Edwards, a large number of specimens of *Orthoptera*, chiefly from Borneo, the *Mantidæ* and *Phasmidæ* being very well represented. Among the *Locustidæ* he showed were a number of the curious Phasmid-like *Proscopiæ* from S. America. Mr. Edwards then read a paper on the *Orthoptera*, devoting his remarks chiefly to the *Phasmidæ*.

and Mantids. A discussion ensued, and among others Messrs. Burr and Tutt gave interesting accounts of their observations of the habits of the European representatives of these two families.—HY. J. TURNER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *February 1st, 1899.*—Mr. GEORGE H. VERRALL, President, in the Chair.

The President briefly returned thanks for the honour conferred upon him by his election, and announced that he had nominated the Rev. Canon Fowler, M.A., F.L.S., Mr. Edward Saunders, F.L.S., and Mr. Roland Trimen, F.R.S., as Vice-Presidents for the Session.

Mr. H. W. Andrews, of 9, Victoria Road, Eltham, was elected a Fellow of the Society.

Mr. Champion exhibited three specimens of an interesting species of *Fulgorida*, *Atalanta auricoma*, Burm., recently received from British Honduras, from M. Blancaneaux; and he stated that he had found Lepidopterous larvæ in the white waxy matter attached to the body of an allied species, *Enchophora stillifer*, Burm., in Central America, of which insect he exhibited a specimen, together with a larva taken from it. This larva was very like that of *Epipyrops anomala*, Westw., a species of *Arctiida*, which is attached to *Fulgora candelaria* in a similar way. He also showed numerous specimens of both sexes of an undescribed species of *Apio-merus* (Family *Reduviida*), found by himself in Chiriqui; and pointed out some of the more interesting peculiarities of each sex. Mr. Tutt, on behalf of the Rev. G. H. Raynor, a long series of *Spilosoma lubricipeda*, Linn., inbred from specimens originally captured in Lincolnshire. Its chief interest seemed to be its demonstration of the fact that the extreme aberrations of this species could be produced by inbreeding from comparatively normal forms, a fact of all the more importance considering how much uncertainty there had been as to the real origin of the race, which was first sent out from Yorkshire, and is now to be seen in many collections of British insects. Mr. Tutt, also a number of closely allied forms of *Anthrocera*, recently received from M. Oberthür, of Rennes, and comprised among others, *A. medicaginis*, Dup., *A. medicaginis*, Bdv., *A. Charon*, Dup., and *A. Charon*, Bdv. Likewise specimens of *Anthrocera filipendulæ*, captured by Mr. W. H. Harwood, near Colchester, which showed remarkable colour-aberrations extending from terracotta-red to orange, as described at length in the account which he had recently given of the genus. He remarked on the peculiarity of these specimens, inasmuch that they appeared more closely to resemble Lederer's well-known Asiatic races of the species than any other yet described. Mr. A. H. Jones, a fine specimen of *Sphæria Robertsi*, one of the Pyrenomycetous fungi, attached to the larva of *Charagia virescens*?. Mr. Percy I. Lathy communicated "A Monograph of the genus *Calisto*;" and the Rev. F. D. Morice papers, entitled, "Illustrations of specific characters in the armature and ultimate ventral segments of *Andrena*, ♂," and "Notes on *Andrena taraxaci*, Giraud."—J. J. WALKER and C. J. GAHAN, *Hon. Secs.*

[The name of Mr. R. Trimen, F.R.S., was accidentally omitted in the list of the Council for 1899—1900, published at p. 49 *ante*.—EDS.]

NOTES ON CERTAIN PALÆARCTIC SPECIES OF THE GENUS
HEMEROBIVS.No. 1.—INTRODUCTORY REMARKS AND THE GROUP OF *H. NERVOSUS*.

BY ROBERT McLACHLAN, F.R.S., &c.

It has long been evident to workers on the European species of this genus (as now restricted) that specific determination is often difficult.

When in 1868 (Trans. Ent. Soc. Lond., 1868, pp. 145, *et seqq.*) I published my "Monograph of the British *Neuroptera-Planipennia*," I made what was probably the first extended attempt at elucidating the subject by descriptions and figures of the male appendages. The remarks at p. 175 of that Monograph as to synonymy and structure obtain almost equally well now, after the lapse of more than thirty years, as then. But it is perhaps possible to throw a little more light on the subject. More than ten years ago I had in view a Revision of the palæarctic species, and had prepared fresh figures of the anal parts for several of them. About that time it was considered advisable that I should abandon, at any rate temporarily, *camera lucida* drawing, and having once abandoned it, the difficulty of resuming it became apparent when attempted. Ever ready to assist me, and influenced by the fact that at least two British species have never been properly elucidated, my friend and former pupil (in *Neuroptera*), Mr. K. J. Morton, kindly came to my aid, and supplied the necessary drawings.

I think it possible, in most cases, to separate the *males* by the anal structural characters, and these notes mainly concern these characters. Of course, in most cases, the females can be rightly assigned to their proper partners by general characters, but I am not yet able, in the majority of cases, to bring forward structural anal differences in that sex, and there are several instances in which the males show very striking anal structure, rendering differentiation easy, but in which I am not yet quite able to satisfactorily identify the respective females when, as is often the case (for the females seem more plentiful), unaccompanied by the males from the same locality; and even if the males be present, it happens that two species very similar in general aspect often occur together. Time, and more careful observations, especially *in the field*, will no doubt remedy this, and possession of the key once obtained, future workers will probably find all difficulties vanish.

It is scarcely necessary to remark that the numerous extra-palæarctic, especially North American, forms, *can never be satisfactorily elucidated unless treated in the same manner*. In connection with this it is necessary to give a warning to the effect that certain palæarctic

species are apparently nearctic also, and that the nomenclature and synonymy of the former cannot be considered settled until a careful revision of the latter be made, for there appear to be cases in which the name bestowed upon nearctic examples may have the right of priority.

In putting together these notes a certain amount of preliminary knowledge on the part of the reader has been presumed.

HEMEROBIUS NERVOSUS AND ALLIES.

The members of this group are amongst the largest of the palæ-arctic species. The prevailing colour may be said to be *grey*. The thorax above has a broad, longitudinal, pale (whitish to ochreous) band (in which is a black median line) which is deep black on each side. The wings are long-oval, the anterior pair mottled with grey and greyish-black, and the venuration white interrupted with blackish (or *vice versa*), the gradate nervules forming ill-defined dark fasciæ. The anal structure of the males seems to partake of the same general plan in all the species.

H. NERVOSUS, Fab, (1793), *et auct.*

? *H. betulinus*, Ström, Nye Samling af det Kongel. Norskes Bidensklabers Selskabs Skrifter, ii, pp. 387—389, tab. v (1788).

The anterior wings usually prettily mottled. By several authors (including Brauer and myself) it has been said that the second "post-costal"* cellule (*cf.* Brauer, Neuropt. Austr., fig. 103) is open. This, if constant, would be a very satisfactory character by which to separate the females of this species. But it is not constant, for I have several males undoubtedly belonging here in which the cellule is closed.



The appendages of the ♂ have the basal portion long and rather narrow, the apical portion regularly curved and not forming an abrupt angle with the basal, its edge finely serrate at the tip inwardly.

A wide-spread species, extending into the Arctic Circle, probably less common south of the Alps. Very partial to birch trees.

I have a very strong opinion that this insect is in all probability Ström's *H. betulinus*, and it is solely my dislike for upsetting existing nomenclature that deters me from adopting the name. Ström's description is full (and there is a good figure), even to the male appendages, which so far as I can make out were as in *nervosus* and not

* It seems to me that *post-cubital* would be more correct than *post-costal* for these cellules.

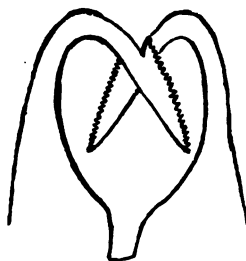
the allied species. In fact, the whole account was far in advance of the times. He bred the insect, but possibly confused more than one species in the larval state. Now that attention has been called to the subject the matter may be left for elucidation, and more especially by Scandinavian entomologists. Schöyen (Christiania Vid.-Selskabs Forhandl., 1887, No. 13) referred *betulinus* doubtfully to *subnebulosus*.

H. SUBNEBULOSUS, Steph.



Of the same form as *H. nervosus*, but as a rule with the anterior wings less mottled.

In the ♂ the appendages have a broad, straight, basal portion, from which the very narrow apical portion descends at a right angle and is strongly incurved at the tip, which is furnished externally with a barb, the outer edge of which is finely serrate for its whole length, the tips often crossing if viewed from beneath.



Possibly found all over Europe and adjacent districts. In England it is especially a garden insect, and as such liable to be dispersed with plants and shrubs. Occurs in the interior of London, and one of the first to appear in spring. I have it from Portugal and Madeira. In most English examples the anterior wings appear almost of a pale leaden-grey, requiring magnifying power to break up into (mostly) angulate markings, but those from southern Europe are much paler. I may be wrong, but it has occurred to me that the specimens from in and around London are the darkest of all.

H. MORTONI, n. sp.

Having the anterior wings apparently broader and more obtuse than in the two preceding, arising from the costal edge being more arched (hence the costal area is broader, especially at the base). As a rule less strongly mottled than in *nervosus*, and less uniform than in *subnebulosus*.

The anal appendages of the ♂ having the basal portion straight and rather broad, the apical portion descending from it at a right angle in the form of a straight short process, with no barb at the apex, but the tip obscurely toothed, and microscopically serrate on the edge if viewed from beneath. A further character for this species is that in the ♂ the dorsum of the apex of the abdomen is rather densely clothed with golden coloured hairs.

Apparently a boreal and alpine species, but very wide-spread; probably always fre-



quencing conifers. I cannot discover that it has been anywhere described, but there can be little doubt it is confused with the allied species in some collections and lists. I possess about thirty-five examples referred here. Males (with females) from Finmark (*Chapman* and *Lloyd*); Switzerland (*Bergün*, *Zeller*; *Valais*, *Fallou*); North Italy (*Macugnaga*, *Val Anzasca*, *Val Furva*, *Eaton*, *McLachlan*); Alps of Dauphiné (*Bourg d'Oisans* and *La Grave*, *McLachlan*); *Pyrenées Orientales* (*McLachlan*), *Eaux Bonnes* (*Eaton*). Also females without males (hence slightly less certain) from Switzerland (*Bignasco*, *Eaton*; *Val Levantina*, *McLachlan*); Tyrol (*Cortina*, *Champion*); Austria (*Brauer*); Carinthia (*Zeller*); Savoy (*Chamonix*, *McLachlan*); Central Pyrenees (*Eaton*); various localities in Germany (*Zeller*). Mr. Morton took both sexes (the types) at Rannoch, Scotland, in June, 1898.

There might be a possibility of confounding this with examples (exceptional in neuration) of *H. concinnus*, Steph., var. *quadrifasciatus*, Reuter. But both sexes of the latter differ widely in the anal parts, for in *H. concinnus* the female abdomen ends in a prominent short upturned ovipositor.*

I have a species from North America (Colorado) so much like *Mortoni* that I dare not say it is distinct.

Lewisham, London :

January, 1899.

PSEUDO-NEUROPTERA, PLANIPENNIA, AND TRICHOPTERA
COLLECTED AT RANNOCH IN JUNE, 1898.

BY JAMES J. F. X. KING, F.E.S.

Towards the end of 1897 Mr. C. A. Briggs made a proposal to the effect that an excursion should be arranged to Rannoch of such entomologists as were more or less interested in *Neuroptera*, with the view of working up this group especially, and particularly of capturing *Äschna cærulea* (*borealis*) and *Somatochlora arctica*. The result of this proposal was that Mr. G. T. Porritt joined me in Glasgow on the afternoon of June 6th; we left the city by the early West Highland train on the morning of the 7th, meeting Mr. Briggs, who had travelled through from Lynmouth, at a wayside station outside of

* I take this opportunity of stating that the North American *H. longifrons*, Walker, was introduced by me (Journ. Linn. Soc., Zool., ix, pp 272-273) into the European Fauna in error, and the name should be expunged from the lists. The European examples were *H. concinnus*, var. *quadrifasciatus*, and I now feel sure the American *H. longifrons* is distinct, but allied.

Glasgow. We then arrived at Rannoch station about 11 a.m., where we met the Rannoch mail coach, which carried us to the head of the loch, but as the mail route was along the north side that day, we had to proceed on our way to Camachgouran on foot, our baggage being brought along in a cart.

Having arrived at our quarters, and partaken of some refreshment, during which our baggage was announced, we got our nets, &c., into order, and sallied forth to have a look at the well-known entomological hunting ground, the Black Wood.

Mr. K. J. Morton joined our small party on the Friday after our arrival, and stayed over the week end. During our stay, which just extended to a fortnight, we had the pleasure of the company of Dr. McCallum and Mr. Wm. Reid, and of Mr. and Mrs. Cowl, of Bournemouth.

On the whole, we had very fair weather, although there was a considerable amount of snow on the hills around; the evenings were very cold, and on one day we had a thunderstorm.

Previous to our visit, the season had been very wet and cold, consequently the ground was damp, and in parts of the wood very swampy.

The take of *Neuroptera* was fairly good, including as it did three species new to Britain (indicated by asterisks), and some others rather uncommon.

Our work was confined to the immediate vicinity of Camachgouran and the Black Wood, only one or two trips extending to any distance from our head-quarters.

PSEUDO-NEUROPTERA.

PSOCIDÆ.

Procus fasciatus, F., one specimen.

Elipsocus hyalinus, Steph., a few, rather immature.

PERLIDÆ.

Perla maxima, Scop., was taken by Messrs. Briggs and Morton under stones in Cross Craig Burn.

Isogenus nubecula, Newm., abundant under stones along the loch side, very often ten or twelve could be seen nestled together under one small stone.

Chloroperla grammatica, Poda, common.

Isopteryx tripunctata, Scop., Cross Craig Burn and loch, common; *torrentium*, Cross Craig Burn and loch, common.

Taniopteryx Risi, Mort., taken by us all, sparingly.

Nemoura variegata, Oliv., common; *Meyeri*, Pict., not common; *cinerea*, not common.

Lucetra, sp.?, common.

EPHEMERIDÆ.

Leptophlebia marginata, Lin., Cross Craig Burn, two specimens; *submarginata*, Steph., Cross Craig Burn, two specimens; **Meyeri*, Etn., on the moor above the Black Wood, common.

**Ameletus inopinatus*, Etn., one specimen on the sandy spit at the mouth of the Dall Burn was taken by Mr. Briggs.

Siphylurus lacustris, Etn., a few were taken.

Ecdyurus venosus, Fab., a few were taken: *lateralis*, Curt., a few were taken.

ODONATA.

Leucorrhinia dubia, Lind., was not uncommon at two or three localities, but, as usual, males were rather difficult to catch. On June 11th and 12th the ♀s were found drying their wings near a little loch above the Black Wood, near which we also found the empty skins of the nymph.

Libellula quadrimaculata, Linn., as usual very common everywhere.

Somatochlora arctica, Zett. This species was obtained in the Black Wood, flying south from the direction of the loch towards the higher ground; over a dozen specimens were taken in all.

Cordulegaster annulatus, Latr., as usual, common.

Æchna cærulea, Strm. (*borealis*). With hard work this species was obtained in numbers; we all found that it is inclined to be inquisitive, one specimen alighted in my white net, and another settled on Mr. Briggs' face. This has been observed before by Mr. Morton, when in the Glen Lochay district. *Juncea*, Lin. A curious specimen, so much like a *cærulea* that it may be a hybrid, especially as no other *juncea* occurred to any of us, and it was early for the species.

Pyrrosoma minium, Harr., common.

Enallagma cyathigerum, Charp., common.

PLANIPENNIA.

Sialis lutaria, Linn., common; *fuliginosa*, Pict., Mr. Briggs obtained this by sweeping at a small stream near the Black Wood.

Hemerobius inconspicuus, McL., Black Wood, one specimen; *nitidulus*, Fab., common; *micans*, Oliv., common; *humuli*, Lin., one specimen by beating; *limbatus*, Wesm., common; *nervosus*, Fab., fairly common; **Mortoni*, McL., two specimens by beating in the Black Wood were obtained by Mr. Morton.

Contopteryx psociformis, Curt., *aleyrodiformis*, Steph., both species fairly common in the firs.

TRICHOPTERA.

Neuronia ruficrus, Scop. This species was found flying in the sunshine upon the moor, and was also beaten out of the fir trees, not uncommon.

Phryganea obsoleta, McL. A few specimens were taken at a loch above the Black Wood.

Colpotaulius incisus, Curt., was obtained by sweeping at night in the low marshy ground between Camachgouran and the loch.

Grammotaulius atomarius, F., taken along with the last species.

Limnophilus flavicornis, F., was taken in the same ditch as the two previous species; *elegans*, Curt., two specimens of this scarce species were obtained by beating

fire, one by Mr. Morton, the second by myself; *centralis*, Curt., common everywhere by beating; *auricula*, Curt., taken in the Black Wood; *griseus*, L., very common by beating fire; *extricatus*, MoL., *luridus*, Curt., *sparsus*, Curt., these three were obtained by sweeping over the marshy ground, and also by beating fire.

Micropterna lateralis, Steph., taken at night by sweeping, and also at the Lepidopterists' sugar.

Ecclisopteryx guttulata, Pict., one specimen taken.

Apatania Wallengreni, MoL., not uncommon along the loch side, but we were much too late for the males, only an odd one or so being taken.

Brachycentrus subnubilus, Curt., common, with the last.

Philopotamus montanus, Donov., taken on the moor above Camachgouran.

Plectrocnemia conspersa, Curt., not uncommon in the small streams upon the moor, but a little difficult to catch.

Rhyacophila dorsalis, Curt., on the moor burns.

Hydroptila forcipata, Etn., in bedroom, probably from Cross Craig Burn, introduced on my beating umbrella.

207, Sauchiehall Street, Glasgow :

February, 1899.

MICRO-LEPIDOPTERA IN CUMBERLAND IN 1898.

BY G. WILKINSON.

The season of 1898, taken as a whole, was rather a disappointing one; nevertheless, I succeeded in adding about twenty species new to my list. In January larvæ of *Phlaodes immundana* were as usual very common all through the district in alder catkins, and cases of *Coleophora caspititiella* swarmed wherever the common rushes were growing. I collected a lot of oak and beech leaves for *Lithocolletis* pupæ, and subsequently bred plenty of *L. quercifoliella*, *faginella*, *Cramerella*, *Heegeriella*, and a few *irradiella*. Throughout February hibernated examples of *Depressaria applanata*, *arenella* and *ocellana* were frequently met with. On March 12th I took my first *Diurnea fagella* sitting on a fir trunk, and on the same date *Tortricodes hyemana* was flying in profusion. I found the best method of taking the females of the latter to be by searching the oak trunks at night with a lamp; they appeared to prefer to be near the ground, as most of them were found very low down. April 3rd saw *Ephestia Kühniella* coming out in scores from larvæ obtained in one of the flour mills in town. On the 8th, whilst travelling to Keswick, I took in the railway carriage a new *Tortrix* to my list, *Phlaodes crenana*.

It was now about time to look up the various species in the genus *Micropteryx*. The way we worked for these was by procuring a large white sheet about 8 ft. by 6 ft., and two held the sheet underneath the trees whilst one beat them; I always found the best time to work was between four and six o'clock. By beating through the day they mostly fly, and therefore do not get into the sheet; whilst towards dusk they drop down and sit quite still. By this means we took *caledoniella*, *purpurella*, *Sangii*, *semipurpurella*, *subpurpurella*, *unimaculella* and *Sparmannella*. By far the most common was *unimaculella*. We did not confine ourselves to any kind of tree,

but gave every one a shake; we found the fir trees which were growing amongst the birch to produce a good many specimens. *Plutella cruciferarum* were taken flying above the heather on the 23rd; on the 30th we began to take larvæ and pupæ of *Retinia turionana* from the shoots of fir: the affected shoots can very easily be detected, as they are invariably covered with resin. *Nepticula salicis* was out amongst sallow on May 1st, and cases of *Coleophora pyrrhulipennella* were taken by sweeping the heath the same date. Three days later I took my first *Argyresthia Gadartella* and *Elachista rufocinerea*. Larvæ of *Platyptilia gonodactyla* were found plentifully feeding in the flowers of coltsfoot on the 6th. *Epigraphia Steinkellneriana* and *L. alnifoliella* were taken on the 8th, both beaten from hawthorn. The 15th produced *Gelechia longicornis* and *G. ericetella* from amongst heather, *C. albicosta* from furze, *M. calthella* from flowers of lady's smock. Larvæ of *Depressaria assimilella* were very common between united twigs of broom.

A visit to Wreay on the 9th saw taken the following:—*Glyphipteryx fuscoviridella*, *P. gonodactyla*, *Stigmonota dorsana*, *Crambus tristellus*, *C. pratellus* and *C. hortuellus*. Two days spent at Keswick on the 18th and 19th were very disappointing, only *Scoparia ambigua* turning up. At Durdar, on the 20th, I beat out of fir *R. pinivorana* and *Pedisca rubiginosana*; I also bred *Aspis Udmanniana* from bramble the same date. *Coleophora genistæ* began to emerge on the 23rd, and was joined on the 24th by *C. nigricella*. *Mixodia Schulziana* was not scarce amongst heather, along with *Pleurota bicostella*. *Argyresthia retinella* and *Gracilaria semifascia* were taken from birch and sallow on July 4th, and on the 11th *Cemistoma laburnella* and *spartifoliella* were taken in the pupa state, the former from laburnum, the latter from broom; pupæ of *D. costosa* were also taken in their white webs on furze. *Sericoris conchana* and *lacumana*, *Ochsenheimeria Birdella*, and *Eupæcilia angustana* were noticed at Newby Cross on the 17th. Along the banks of the Caldew on the 26th *Catoptria Scopoliæ* was taken in numbers, and from a small plantation *Chelaria Hübnerella*, *Gelechia populælla*, *Batrachedra preangusta* and *Phoxopteryx Mitterbacheriana* were beaten. *Depressaria umbellana* and *Gelechia mulinella* were bred from furze. One day in August (8th) produced *Micros* in plenty. *Grapholitha Paykulliana*, *Argyresthia albistria*, *A. conjugella*, *A. semitestacella*, *Peronea aspersana*, *Phoxopteryx Lundana*, *P. comparana*, *Harpella xylostella*, *Penthina betuletana*, *Chelaria Hübnerella*, *Harpella nemorella*, *Grapholitha nisella*, *Cerostoma costella*, *Pedisca Solandriana*, *Elachista luticomella*, *Coleophora flavimaculella*, *Gelechia sororculella*, *G. cinerella*, and *Lithocolletis viminella*. Some few vars. of *Teras caudana* were taken a week later, seven of them being pale yellow delicately reticulated with reddish-brown. *Peronea Schalleriana* and *Elachista zonariella* turned up on the 15th; *Teras contaminana* and *P. variegana* both variable, the latter especially so, I noticed on August 22nd. One specimen of *Exapate gelatella* and a few hibernated examples of *Depressaria heracleana* were all that were taken in October.

Besides the *Micros* mentioned in the foregoing list, I have had since named by Mr. Barrett the following, all from this district:—*Dictyopteryx læsingiana*, *Peronea ferrugana*, *Grapholitha navana*, *Sciaphila pascuana*, *S. subjectana* and *virgaureana*, *Coleophora limesipennella*, *Argyresthia ephippella*, *Laverna lacteella*, *Ornis guttea*, *Lampronia prelatella* and *rubiella*, *Aphelia pratana*, *Lithocolletis coryli-*

foliella, *Opostega crepusculella*, *Chrysocorys festaliella*, *Gracilaria stramineella*, *Spilonota dealbana*, *Micropteryx Seppella*, *Nepticula angulifasciella*, *Tortrix icterana*, *Perittia obscuripunctella*, *Nepticula anomalella*, and from the Keswick district, *Crambus ericellus* and *furcatellus*.

29, Arthur Street, Carlisle :

March, 1899.

LECANIUM LONGULUM, DOUGLAS, PARASITIZED BY *LECANIOBIUS*
COCKERELLI, ASHMEAD. SECONDARY PARASITE,
HOLCOPELTE, n. sp., ASHM.

BY CHAS. H. DOLBY-TYLER, F.E.S.

SCALE.

The presence of a parasite is readily determined by the external appearance of an infested scale. Normal dried up scales are less plentiful in nature, since they readily detach from the bark, and are shaken off by the swaying of a bough or blown away by wind; they are fairly translucent, of a dull fuscous colour, and without any prominent character to denote their condition—whereas infested scales are somewhat transparent, of a slightly lustrous brown, and bear round their base at the angle formed with the margin an apparently continuous black fascia; they are hard, brittle, and their margin adheres most tenaciously to the bark—due evidently to the adhesive property of the insects' body juices which accumulate at the base. The point of emergence of the parasite is usually sub-apical cephalod.

PRIMARY PARASITE.

Lecaniobius Cockerelli, Ashm.—This parasite is also recorded as infesting *L. begoniae*, Dougl.* Although I have carefully examined several hundred parasitized scales I have been unable except in two instances to discover the primary parasite, but in a third I found a larva which was subsequently reared, and proved to be the same insect.

In one instance, only the head of a chrysalid was discernible, while under or within the same scale was a pupa of the secondary parasite referred to below. In the other I found a living pupa, which lay loosely within the scale, its position being identical with the latter. I may add that I have reared the same parasite from *Ceroplastes roseatus*, Townsend and Cockerell (Journal N. Y. Ent. Soc., Sept., 1898, p. 176).

*Cockerell in Bull. Bot. Dept., Jamaica, May, 1894, page 70, where the insect is referred to though not specifically.

SECONDARY PARASITE.

Determined by Mr. Ashmead to be a new species of *Holcoppelte*. I found these in abundance in every stage of development, and on more than one occasion have found them curled up within the body of a ♀ scale in company with young Coccids. The pupa is generally attached to the inner upper caudal surface of the scale by short white filaments issuing from the ovipositor, and its position then was longitudinal with the scale, the tergum ventrad, and head cephalad of the latter. I have, however, frequently found it unattached—the existence of the caudal filaments not being constant—when its position varied from the foregoing. The imago is of a beautiful metallic green colour and quite hardy. I regard the attachment by caudal filaments as anomalous in a secondary parasite.

For identification of the parasites I am indebted to the kindness of Dr. L. O. Howard and Messrs. Marlatt and Ashmead respectively.

British Consulate, Panama :

December 3rd, 1898.

TRANSMISSION OF NATURAL HISTORY SPECIMENS ABROAD BY
SAMPLE POST.

BY THE RIGHT HON. LORD WALSLINGHAM, M.A., LL.D., F.R.S., &c.

In August, 1890, my friend John Ponsonby, an ardent collector of land shells, wrote to me enclosing for approval a Memorial to the then Postmaster-General, which was being got up by Mr. Edgar L. Layard, to urge, on behalf of British Naturalists, that samples and small parcels of Natural History specimens should share the advantages of reduced rates then confined to trade samples sent by post, and pointing out that such advantages were enjoyed by Naturalists abroad. On March 18th, 1891, this Memorial, with 120 signatures attached, was sent to the Postmaster-General, and about a month later permission was given to send Natural History specimens abroad by Sample Post so far as the British Post Office was concerned, but Sir A. Blackwood, writing on behalf of the Postmaster-General (Mr. Raikes), declined to guarantee their delivery.

Specimens were thus sent in and after 1891, but in January, 1894, owing to the refusal of the Dublin Post Office to transmit specimens from the Dublin Museum, which was brought to my notice in a letter from Mr. R. F. Scharff, I addressed enquiries to the London General Post Office on the subject, and was assured that in practice facilities would still be given, although it was desirable on departmental grounds that the matter should not be publicly stirred. This small concession was not long maintained, for on February 26th, 1894, Mr. Arnold Morley (then Postmaster-General) communicated to me through his Secretary his regrets that the permission of 1891 must be withdrawn.

From 1894 to 1896 an intermittent correspondence was carried on between the

General Post Office on the one side, and my Secretary (Mr. Durrant) and myself on the other, in which I endeavoured to convince the authorities that British Naturalists should at least be allowed to enjoy such facilities as were given in other countries equally members of the Postal Union, and that notably in the acceptance by our Post Office of small boxes of flowers sent from France at sample rates they were permitting to other signatories of the Postal Convention an infringement of the rules therein laid down, while their own over scrupulous regard for the letter of those rules was inflicting great disadvantages upon those who might desire to oblige their correspondents abroad in a reciprocal manner. In effect, the action of the Post Office permitted a Frenchman to send a box of specimens to this country at a cost of 15 centimes, while, at the same time, obliging an Englishman to pay at least one shilling and fourpence in returning the same box to France!

In 1896 the British Association appointed a Sub-Committee to concert measures for bringing about a reform, and in March of that year, by the direction of that Committee (consisting of R. McLachlan, F.R.S., Col. Swinhoe, Dr. Stiles, and Dr. H. O. Forbes), I, as Chairman, wrote to the Duke of Norfolk (then Postmaster-General) requesting him to refer to the lengthy correspondence, and urging a reconsideration of the case. Nothing was done at the time, but in June, 1897, the Postal Union Congress at Washington decided that Natural History specimens should in future be allowed to go by Sample Post, thus reversing the decision arrived at at their last meeting when the proposal had been defeated, partly through the influence of the British delegates.

The new regulations came into operation on January 1st, 1899, and although no reference is made to these regulations in the list of "Principal Alterations" printed on the cover of the new Post Office Guide, they are given on p. 424 of that Guide, as follows:—

PATTERNS AND SAMPLES.

"Natural History specimens, dried or preserved animals and plants, and geological specimens, may be forwarded at the sample rate when sent for no commercial purpose and packed in accordance with the Sample Post regulations."

Limits of Size and Weight.

- (1) British Colonies or Possessions and non-Union countries—5 lbs. ;
2 ft. × 1 ft. × 1 ft.
- (2) Foreign Countries in Postal Union—12 ozs. ; 12 in. × 8 in. × 4 in.
(if a roll, 12 in. × 6 in.).

Rate of Postage.

½d. per 2 oz. (minimum charge, 1d.).

Packing.

Must be sent in such a manner as to be easy of examination, and when practicable, must be sent in covers open at the end. Letters may *not* be enclosed, but descriptive labels are permitted.

It is satisfactory to be able to record that the agitation, although prolonged for eight years, has not been fruitless in the end, and we may reasonably hope that a stimulus may thus be given to the useful exchange of specimens and information between increasing numbers of workers in Science who reside at distances which practically prohibit personal intercourse.

Merton Hall, Thetford:
February 22nd, 1899.

LIST OF THE ORTHOPTERA OF ROUMANIA, WITH LOCALITIES

BY MALCOLM BURR, F.Z.S.

Of the *Orthoptera*-Fauna of Roumania we have at present two accounts, both necessarily very incomplete, as so little collecting has been done in the country.

Both accounts were published about the same time, at the beginning of the past year. The present list includes all species hitherto quoted, with the addition of a considerable number, taken in the past season by M. Montandon, of Bucarest, and myself. All species recorded for the country for the first time are marked *.

My first list included fifty-two species, and that of M. Jaquet twenty-eight, of which eight were not mentioned in my list. The following account brings the total number of *Orthoptera* known to occur in Roumania to eighty-six.

I take this opportunity of expressing my thanks to M. Montandon for the material he has sent me from time to time, and for his assistance in every way in compiling this paper, as well as for his courtesy and hospitality during my brief sojourn at Bucarest.

WORKS QUOTED.

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JAQUET, Dr. Faune de la Roumanie. Orthoptère nouveau décrit par H. de Saussure. 1898. *Bulletin de la Société des Sciences de Bucarest*, An. vi, No. 6.

JAQUET, Dr. Faune de la Roumanie. 1898. *Op., et loc. cit.*

BURR, M. A list of Roumanian *Orthoptera*, with descriptions of three new species. *Trans. Ent. Soc. London*, 1898. Part i, April.

FORFICULARIA.

1. *Labidura riparia* (Pall.). Sand on the bank of Lake Tusla, April, and Mangalia, May (Jaquet); Buzeu, Meledie und Gurguiata, in the region of Rimnicu Sarat (Burr).

2. *Labia minor* (L.). Bucarest (Burr).

3. *Forficula auricularia*, L. Bucarest (Burr), with the variety *borealis*, Steph.

BLATTODEA.

ECTOBIDÆ.

4. *Ectobia lapponica* (L.). Cruce, in Moldavia (Burr); var. *erythronota*, Br.; Comana, in April and May (Montandon).

PHYLLODROMIDÆ.

5. *Phyllodromia germanica* (L.). Bucarest (Jaquet, Burr).

PERIPLANETIDÆ.

6. *Blatta orientalis*, L. Bucarest (Jaquet).

MANTODEA.

MANTIDÆ.

*7. *Mantis religiosa*, L. Common at Comana, nymphs in July, 1898 (*Montandon, Burr*).

8. *Ameles decolor* (Charp.). Tulcea in Dobrudja (*Br.*).

EMPUSIDÆ.

*9. *Empusa fasciata*, Brull. ? One larva from Macin in Dobrudja, 1898 (*Montandon*).

ACRIDIODEA.

TRUXALIDÆ.

10. *Truxalis nasuta* (L.). Comana, October (*Jaquet*), nymphs in July, 1898 (*Burr*).

11. *Chrysocraon brachypterus* (Ocsk.). Comana, common (*Burr*); Sinaia and Doftana (*Montandon*).—*12. *Ch. dispar* (Heyer). Comana, July (*Burr*); Doftana and Azuga (*Montandon*).

13. *Stenobothrus lineatus* (Panz.). Comana, in October (*Jaquet*), and July (*Burr*); Bufta, in July (*Burr*).—*14. *St. nigromaculatus*, Kr. Comana, in July, 1898 (*Burr*).—*15. *St. nigrogeniculatus*, Br. Comana, in July, 1898 (*Montandon, Burr*).—*16. *St. stigmaticus* (Ramb.). Sinaia, in August (*Montandon*).—17. *St. rufipes* (Zett.). Comana (*Jaquet, Burr*); Azuga (*Montandon*).—18. *St. pullus* (Phil.). Cruce in Moldavia (*Burr*).—19. *St. bicolor* (Charp.). Comana, Gradistea, Bucarest (*Burr*).—20. *St. biguttulus* (L.). Comana (*Jaquet, Burr*); Doftana in Wallachia, 1898 (*Montandon*).—21. *St. dorsatus* (Zett.). Pantelimon, August (*Jaquet*); Bucarest and Comana, very common (*Burr*).—22. *St. pulvinatus* (Fisch. de W.). Comana (*Burr*); Dobrudja (*Br.*).—23. *St. elegans* (Charp.). Cruce, in Moldavia (*Burr*); Laku Sarat (*Montandon*).—*24. *St. parallelus* (Zett.). Comana (*Burr, Montandon*), 1898; Sinaia, Doftana (*Montandon*).

25. *Gomphocerus rufus* (L.). Comana, in October (*Jaquet, Burr*).

*26. *Stauronotus maroccanus* (Thunb.). Macin, in Dobrudja (*Montandon*).

—*27. *St. brevicollis*, Eversm. Common at Bucarest, July, 1898 (*Burr*).

*28. *Stethophyma fuscum* (Pall.). Doftana, in Wallachia, 1898 (*Montandon*).

*29. *Epacromia thalassina* (Fabr.). Bucarest (*Jaquet*); very common at Comana (*Jaquet, Burr*, 1898); Buzeu (*Burr*).

CÆDIPODIDÆ.

*30. *Sphingonotus caeruleus* (L.). Comarniuc, 1898 (*Montandon*).

31. *Acrotylus insubricus* (Scop.). Comana, Gradistea, Bucarest, in July (*Burr*); Comana, in October (*Jaquet*); Bufta, in July (*Burr*).—32. *A. versicolor*, Burr. A single female at Plainesti, in the region of Rimnicu Sarat (*Burr*). Brunner regards his species as intermediate between *A. insubricus* and *A. patruelis* (Sturm), and it may be merely a variety of either.—33. *A. longipes* (Charp.). Buzeu, Meledio (*Burr*).

34. *Cædipoda miniata* (Pall.), var. *flava*, Sauss. Macin, in Dobrudja, 1898 (*Montandon*). This variety with yellow wings is recorded from Asia Minor by de Saussure, from which locality I possess an example. I know of no other instance of the yellow variety occurring in Europe.—35. *C. caeruleus* (L.). Comana (*Jaquet, Burr*); Gradistea, Bucarest (*Burr*); Bufta, 1898 (*Burr*).

36. *Psophus stridulus* (L.). Cruce, in Moldavia (Burr).

37. *Eremobia limbata* (Charp.). Dobrudja (Br.).

ACRIDIDÆ.

38. *Caloptenus italicus* (L.). Comana (Jaquet); Buzeu, Meledic (Burr) — Comana, Bufta, 1898, July (Burr).

39. *Podisma mendax* (Fisch.). Comana (Jaquet, Burr), fairly common.—40. *P. alpinum* (Koll.), var. *collinum*, Br. Comana, from July to October (Jaquet, Burr).—*41. *P. Schmidtii* (Br.). Doftana (Montandon).

42. *Platyphyma Giornæ* (Rossi). Comana (Jaquet); very common at Bucarest, July, 1898 (Burr).

TETTIGIDÆ.

43. *Tettix bipunctatus* (L.). Castel Peles, Sinaia, May, and Castel Peles, August (Jaquet); Bucarest and Comana, very common, July, 1897, 1898 (Burr).—

44. *T. subulatus* (L.). Near the Lake of Mangalia, May; Comana, October (Jaquet); Cruce, in Moldavia, Gradistea and Bucarest (Burr). Very common at Comana; Bufta, July, 1898 (Burr).

LOCUSTODEA.

CALLIMENIDÆ.

45. *Dinarchus dasypus* (Illig.). Macin, in Dobrudja (Montandon).

46. *Callimenes oniscus* (Charp.). Young larvæ at the edge of Lake Mangalia, May (Jaquet).—47. *C. Pancici*, Br. Young larvæ at the edge of Lake Mangalia, May (Jaquet).—48. *C. Montandoni*, Burr. A single male from Comana (Burr).

PHANEROPTERIDÆ.

49. *Pæcilimon thessalicus*, Br. Along the Bucarest-Giurgevo Railway, two kilometres from Comana, in June (Jaquet).—50. *P. thoracicus* (Fieb.). Extremely numerous on low herbage at Comana in July, 1898 (Montandon, Burr).—51. *P. elegans* (Fieb.). Comana, in July (Burr, Montandon).—52. *P. Fussi*, Br. Dobrudja (Brunner).—53. *P. Brunneri* (Friv.). Dobrudja (Brunner).

54. *Isophya acuminata*, Br. Two kilometres from Comana, along the railway, in June (Jaquet).—55. *I. obtusa*, Br. In the same locality in June (Jaquet).—56. *I. rectipennis*, Br. Comana, in July (Montandon, Burr). This species has hitherto only been recorded from Brussa, in Asia Minor. The specimens from Comana were determined by Herr Brunner von Wattenwyl, who informs me that they are slightly different from the typical form in being a little smaller.—57. *I. modesta* (Fieb.). Tulcea, in Dobrudja (Brunner).

58. *Jaquetia hospodar*, Sauss. Near the Lake Mangalia, in May (Jaquet).

59. *Leptophyes albovittatus* (Koll.). Dobrudja (Brunner); Bufta, Comana, in July (Burr).—60. *L. punctatissima* (Bosc.). Camnina, in the Carpathians (Montandon).

61. *Phaneroptera falcata* (Scop.). Bucarest (Burr).

MECONEMIDÆ.

62. *Meconema varium* (Fabr.). Chiojden, in the district of Rimnicu Sarat (Burr); Comana, in July (Montandon, Burr).

CONOCEPHALIDÆ.

*63. *Conocephalus mandibularis* (Charp.). One nymph near Comana in July (Montandon).

*64. *Xiphidium fuscum* (Fab.). Doftana (*Montandon*).—65. *X. hastatum* (Charp.). Dobrudja (*Brunner*); larvæ at Comana in July (*Burr*).

LOCUSTIDÆ.

*66. *Locusta viridissima* (L.). Bucarest (*Burr*).

*67. *Onconotus Servillei*, Fisch., de W. Comana, August, 1897 (*Montandon*); Comana, in July; Bufta, in July, 1898 (*Burr*).

DECTICIDÆ.

68. *Rhacocleis discrepans* (Fieb.). Common in Dobrudja (*Brunner*).

*69. *Platycleis grisea* (Fabr.). Common at Bucarest and Comana in July (*Montandon, Burr*).—*70. *P. vittata* (Charp.). One male at Bufta in July (*Burr*).—71. *P. brachyptera* (L.). Cruce, in Moldavia (*Burr*).

72. *Thamnotrizon fallax*, Fisch. Dobrudja (*Brunner*).—73. *T. littoralis* (Fieb.). Extremely numerous in the Forest of Comana in July (*Montandon, Burr*).—74. *T. cinereus* (L.). Common at Comana in July (*Montandon, Burr*).

*75. *Pachytrachelus gracilis*, Br. Doftana (*Montandon*).

76. *Decticus verrucivorus* (L.). Val de Barnaru, in Moldavia (*Burr*); common at Comana and Bufta in July (*Montandon, Burr*).

EPHIPPIGERIDÆ.

77. *Ephippigera vitium*, Serv. Comana (*Burr*).

GRYLLODEA.

ECANTHIDÆ.

78. *Ecanthus pellucens* (Scop.). Bucarest; Plainesti, in the district of Rimnicu Sarat (*Burr*).

GRYLLOIDÆ.

79. *Gryllus domesticus* (L.). Cruce, in Moldavia (*Burr*). Bucarest, Filaret, Giurgiu (*Jaquet*).—80. *G. campestris* (L.). Comana (*Jaquet, Burr*); Bucarest, Filaret, Mangalia, Comana (*Jaquet*).—81. *G. frontalis*, Fieb. Very numerous at Comana, Bufta, Bucarest, Filaret (*Burr*).—*82. *G. desertus* (Pall.). Common at Filaret, Bufta, Comana (*Burr*). Macin, in Dobrudja (*Montandon*).

83. *Nemobius Heydeni*, Fisch. Filaret (*Jaquet*).—84. *N. Saussurei*, Burr. Bucarest (*Burr*).

TRIDAOTYLIDÆ.

85. *Tridaotylus variegatus* (Latr.). Gradistea, Comana (*Burr, Montandon*).

GRYLLOTALPIDÆ.

86. *Gryllotalpa gryllotalpa*, L. Cruce, in Moldavia (*Burr*).

Bellagio, East Grinstead:

November, 1898.

Pyrausta cardui on December 31st.—I see in the Ent. Mo. Mag. for February a notice of *P. cardui* in mid-winter. You may care to know that at Tresco Abbey, Isles of Scilly, I saw one on December 31st, 1898, flying about and alighting on the sunny south wall of the house.—F. JENKINSON, 10, Brookside, Cambridge: February 24th, 1899.

Xanthia ocellaris at Kelvedon.—On September 14th, 1896. I took at sugar here what at the time I believed to be a variety of *L. gilvago*, but which Mr. Barrett has since identified for me as *X. ocellaris*.—PERCY C. REID, Feering Bury, Kelvedon: March, 1899.

Second brood of Abraxas grossulariata.—I was much interested in reading Mr. Barrett's note in last month's Ent. Mo. Mag. relative to the above subject. I have, at the present time, a living pupa of this species which I came across upon some palings in the garden here, about the end of last October, at the same time I also found a "spun up" larva of the same insect, which, however, subsequently died. This somewhat unusual occurrence appears to be due to the extremely warm weather which prevailed at the time. Perhaps other observers would let us have their opinion on this apparently unnoticed occurrence.—A. D. IMMS, Linthurst, Oxford Road, Moseley, Worcestershire: March 2nd, 1899.

Habits of Nola confusalis.—Is this considered a woodland species? Until last season I was under the impression that it was almost exclusively so; but, in 1897, and again last season, having observed odd specimens at rest upon a gate I had to pass through in going to my summer residence in the country, I began to think that it was more than an accidental occurrence of stragglers from the woods a short distance away, and that it might be advisable to search the few trees of sycamore, ash and oak scattered in the hedges round about; upon doing so, I was rewarded by finding one, two or three specimens upon every tree, and this day after day as long as the insect was worth taking, the most favoured tree being a poor stunted sycamore close to the gate mentioned previously. Now, as I was never more than half a mile from the well-wooded Hesleden Dene, it is evident that the insect preferred the trees growing in an open situation rather than in sheltered woods, and it would furthermore appear that the larva must be polyphagous upon trees or otherwise a lichen feeder, most probably the latter, as I have no doubt whatever, from the condition of the specimens, that the insects had been reared from the trees from which they were taken.—J. GARDNER, Hartlepool: February 17th, 1899.

Lepidoptera at Hesleden Dene in 1898.—Owing to the abundance of honeydew sugar was a failure until early in August, when a few insects turned up, and about the middle of the month I added a specimen each of *Cosmia affinis* and *Pyralis glaucinalis* to our district fauna, and upon October 22nd two more, viz., *Xylina petrificata* and *Pterophorus acanthodactylus*, of which I also took single specimens upon the same patch of sugar; from what I can learn *X. petrificata* is an addition to the Northumberland and Durham list as well. All were taken at sugar upon the fencing round Hesleden Dene.—ID.

"*Hedya Servillana*, Dup., bred from woody gall of *Cecidomyia salicis*."—Mr. J. E. Collin records under the above heading (*antea* p. 70) the breeding of a specimen of *Hedya Servillana* from a gall of *Cecidomyia salicis*, and adds "I have no doubt that the Cecid. is the maker of the gall, which, however, is made use of by other insects for various purposes." It seems to me so extremely improbable that *H. Servillana* should be bred from a Cecid. gall, that Mr. Collin will, I am sure, forgive

me for asking whether he is *quite* sure that such was actually the case. Seeing that the larva of *H. Servillana* itself makes a swelling or "gall" on a sallow twig, as shown in Dr. Wood's most interesting notes on its habits in Ent. Mo. Mag., xx, 245-6 (1884), one would naturally feel inclined to suggest that there must have been, on one of the twigs gathered by Mr. Collin, a "gall" made by *H. Servillana*, from which its rightful owner subsequently emerged. Various Tortrices, for the purposes of pupation, make use of galls made by other insects (see Ent. Mo. Mag., xxv, 217-220), but *H. Servillana* has no need to do so, since it pupates within its own gall habitation in which its larval life has been spent.—EUSTACE R. BANKES, The Rectory, Corfe Castle: *March 2nd*, 1899.

Early appearance of Cicindela campestris, L.—Yesterday I was pleased to see a specimen of *Cicindela campestris* enjoying the warm sunshine here, and taking short flights along the footpath in front of me. March 1st struck me as being an exceptionally early date on which to see this pretty beetle.—ID.

Quedius longicornis, Kraatz, at Cobham Park.—On February 18th, I met with a single example of this Staphylinid under a small log almost buried in dead leaves at Cobham Park, thereby adding yet another to the long list of rare *Coleoptera* already recorded from that incomparable locality. The diminished eyes, slow movements, and generally immature appearance of *Q. longicornis* all point to a very retired mode of life, which may perhaps account for its rarity.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: *March 1st*, 1899.

Longitarsus rutilus, Ill., &c., at Halstow, Kent.—While cutting tufts in search of *Coleoptera* last Christmas eve in a damp place at Halstow, on the right bank of the Medway estuary below Chatham, I took two examples of a bright red *Longitarsus*, supposed at the time of capture to be only a highly coloured form of the common *L. jacobææ*, Wat. On being set their distinctness from that insect was obvious, and Mr. Champion, on seeing them, pronounced them to be *L. rutilus*, Ill., hitherto very rare in this country, the only specimens either of us had seen being those taken long ago by Mr. Moncreaff at Southsea, on which the late Mr. E. C. Rye introduced the species as British (Ent. Mo. Mag., vii, p. 206). Last Saturday (11th) I went again to Halstow specially to look for the creature, and ere long succeeded in tracing it to its proper food-plant, *Scrophularia aquatica*, at the roots of which, as well as on the young shoots, it occurred in tolerable plenty. The blood-red colour (quite different in tone from that of *L. jacobææ*) of the beetle when alive, especially in the ♂, rendered it very conspicuous; but the afternoon being warm and sunny, it was one thing to see the insect and quite another to bottle it. No Halticid I have ever met with approaches *L. rutilus* in its saltatory powers, and more than once I saw it jump a distance of fully a yard on my collecting paper; *L. agilis*, Rye, which occurred sparingly with it, being by comparison quite easy to secure, despite its specific name. In the same spot I took five specimens of both sexes of the giant flea, *Hystrihopsylla talpæ*, Curtis, as before in the deserted nest of a field mouse.—ID.: *March 14th*, 1899.

Cryptocephalus exiguus, Schneider, in Lincolnshire.—It will interest your

correspondent, Mr. Bedwell, to know that I took eight examples of this rare and interesting species in a little marsh in North Lincolnshire on June 21st and July 13th last year. I have no doubt if I had had more favourable weather I could have got more.—ALFRED THORNLEY, South Leverton Vicarage, Lincoln: *Feb.*, 1899.

Rhizophagus perforatus, Er., in the carcase of a dog.—Some months ago Dr. G. V. Poore sent me some beetles and larvæ, mostly dead, with the history that they had been taken in the carcase of a dog which he had exhumed after a burial of eighteen months at the depth of a spit in loose ground. They proved to be *Rhizophagus perforatus*, Er. This seemed to be a curious locality for fungus-feeding beetles, although *R. parallelocollis*, Er., is recorded as having been taken in coffins in France. However, I subsequently learnt that there were cavities in the flesh filled with fungus which Dr. G. Murray determined chiefly to be a species new to Britain, viz., *Acladium curvatum*, Bon. No doubt this was the attraction, and the *Rhizophagus* must be acquitted of a depraved taste for feeding on carrion.—PHILIP B. MASON, Burton-on-Trent: *February 19th*, 1899.

Gnorimus variabilis, L., at Balham.—It will interest British Coleopterists to know that this fine and interesting beetle is not yet extinct in its old haunts. I have recently seen a specimen which was found by Mr. T. H. C. Taylor lying upon a path in Balham, in July, 1897. Apparently it had been attacked by a bird, as one of the elytra is somewhat damaged. No doubt further examples might be taken by any one having the time and opportunity to examine the old trees on Tooting Common, where half a century ago it was by no means uncommon.—THEODORE WOOD, 157, Trinity Road, Upper Tooting, S.W.: *January 19th*, 1899.

Tachyusa concolor, Er., in Richmond Park.—In my note on *Steni*, &c., in Richmond Park (*antea*, p. 45) I mentioned that several specimens were still undetermined; by comparison with the examples in the Power Collection, I have ascertained that two of these belong to *Tachyusa concolor*, Er., a very local species, and apparently only found in the Home Counties.—T. HUDSON BEARE, Park House, King's Road, Richmond: *February 15th*, 1899.

Anthribus albinus, Linn., in stem of *Stachys sylvatica*.—A few days since, when collecting larvæ of *Ephippiphora nigricostana* in last year's stems of *Stachys sylvatica* near here, I found in one of the stems a specimen of a pretty weevil which I suppose is of rare occurrence, at any rate, I had not met with it since September, 1880, when I found one on the hat of a gentleman I was botanizing with, not far from this same spot, as recorded by the late Thos. H. Hart in the "Entomologist" at the time. I at once recognised my find of the other day as *Anthribus albinus*, Linn., and it may be worth recording again, as the question arose is it likely to be connected with the *Stachys*? and if so, could the beetle be turned up more commonly if this plant was more closely examined, just as the moth, I was then taking the larva of, is more easily procured now we know its habits? Of course the stem may have been used as winter quarters by the beetle, and have no connection with its life history.—WILLIAM R. JEFFREY, Ashford, Kent: *March*, 1899.

[The beetle was probably hibernating in the stem of the *Stachys*. It is usually found about fungoid growth on decaying trees or faggots, like most of its congeners.—G. C. C.].

Xylopertha mutilata, Walk., at Hoylake.—During last October I took a specimen of *Xylopertha mutilata*, Walk., from a seat on the Hoylake Promenade. The beetle was quite new to me, and I am indebted to Mr. Champion for its identification as well as for the information that it is a native of Sumatra and the East Indies. It would probably be introduced in timber, much foreign wood being used in this district for building purposes and in the construction of the new sea front.—E. J. BURGESS SOPP, Saxholme, Hoylake: February 20th, 1899.

List of Diptera taken in the New Forest, with some remarks on the season 1898.—In addition to the rarer species already reported in this Magazine, my captures during 1898 included: *Platysa marginata*, *Macrocera centralis*, *Limnobia bifasciata*, *L. quadrinotata*, *Chrysonotus bipunctatus*, ♀, *Sargus flavipes*, *Beris clavipes*, *B. vallata*, *B. chalybeata*, *Actina tibialis*, *Xylophagus ater*, *Atylotus fulvus*, *Tabanus bovinus*, *T. autumnalis*, *Leptogaster cylindrica*, *Dioctria atricapilla*, *D. rufipes*, *D. Baumhaueri*, *Philonicus albiceps*, *Epitriptus cingulatus*, *Dysmachus trigonus*, *Thereva nobilitata*, *Hybos grossipes*, *Hemerodromia precatoria*, *Argyra diaphana*, *Chrysogaster splendens*, *C. chalybeata*, *C. bicolor*, *Chilosia pulchripes*, *C. flavicornis*, *Melanostoma hyalinatum*, ♂, *Pyrophona ecymi*, *P. rosarum*, *Platychirus angustatus*, *Didea fasciata*, *Syrphus umbellatarum*, *Xanthogramma ornatum*, *Myiolepta luteola*, *Brachyopa bicolor*, *Volucella inflata*, *Sericomyia lappona*, *Arctophila mustitans*, *Merodon equestris*, *Criorrhina ranunculi* (ruficauda), *C. berberina*, *Xylota lenta*, *X. florum*, *Eumerus ornatus*, *Oncomyia atra*, *Ceromasia stabulans*, *Macquartia* sp.?, *Ptilops chalybeata*, *Servillia ursina*, *S. lurida*, *Alophora hemiptera*, *Melanophora atra*, *Dezia rustica*, *Dinera grisea*, *Acanthiptera inanis*, *Pegomyia latitarsis*, *P. fulgens*, *Homalomyia Roseri*, *Cordylura pubera*, *C. albipes*, *Norellia spinimana*, *Amaurosoma fasciatum*, Mg., and *Trichopalpus fraternus*, Mg. (the two latter named for me by Mr. Austen), *Neotriophium præustum*, *Sciomyia cinerella*, *S. lata*, Schin. (not in Verrall), *Tetanocera reticulata*, *Limnia marginata*, *L. rufifrons*, *Sepedon spegeus*, *Psila fimetaria*, *Chyliza leptogaster*, *Loxocera albiseta*, *Lissa lomocerina*, *Acidia lychnidis*, *Trypeta onotrophes*, *Sphenella marginata*, *Carphotricha pupillata*, *Palloptra ustulata*, *Toxoneura muliebris*, *Balioptera tripunctata*, *Ochthera mantis*, *Stegana coleoprata*, and *Phora flava*. Mr. King also gave me three *Oncodes gibbosus*, which he took by beating; and I obtained a nice series of *Urophora cardui* from their galls which were kindly sent to me by the Rev. E. N. Bloomfield. This is a fair list as regards number of species, but unfortunately in too many cases represented only by one or two specimens. Judging from my own experience, the commoner kinds of *Diptera* were not nearly so abundant in 1898 as in the two previous years; but on the other hand, some of the rarer species were more in evidence, which may be accounted for by their having been more easily detected than when swarms of common insects were moving about in every direction. The season opened with cold nights and bleak days, the former continuing all through May and well into June, so what at one time looked like being a very early spring was really a late one. Matters improved in June, and no doubt the latter part of this and the following month were the best time of the year for *Diptera*, but unfortunately I left Lyndhurst on July 9th. Both months were fine and hot, and the same weather prevailed on my return in August, and continuing right through September, everything became parched up, and all insect life was scarcer than usual.—FREDK. C. ADAMS, 50, Ashley Gardens, S.W.: Feb., 1899.

Obituary.

Prof. J. J. Alexandre Laboulbène died in the first week of December last at the age of 73 years. He was born at Agen (Lot et Garonne), France, on August 3rd, 1825. Destined for the medical profession he became house physician ("*interne*") in 1849, after a brilliant career as a student. In 1875 he was elected Member of the Academy of Medicine in Paris, and in 1879 he was appointed Professor of the history of medicine and surgery. He was equally prominent as an entomologist. Elected into the Société Entomologique de France so long ago as 1846, he became its President on three separate occasions, viz.: 1860, 1872, and 1889, and the greater part of his very numerous entomological publications appeared in its "*Annales*." The celebrated Léon Dufour was a friend of his family, and his influence on the manner of work of Laboulbène was strikingly apparent throughout the latter's career. Of systematic work he did but little: the chief was the part he took with his friend and survivor, Léon Fairmaire, in the *Coleoptera* of the "*Faune Entomologique Française*" in 1854-56. Almost all his work lay in the direction of habits, economy, anatomy, &c., and each of his many papers on these subjects is a monograph in itself, illustrated by his own pencil: perhaps *Coleoptera* and *Diptera* attracted him most, but parasitism in all its forms was specially attended to. Personally he was one of the most affable and courteous of men, always acting up to the words pronounced by him at a meeting of the Soc. Ent. de France, on October 14th, 1863, which were chosen as the motto for the cover of this Magazine at its commencement in 1864, and have continued ever since:—"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."

Charles Stuart Gregson died at Liverpool on January 31st, 1899, in his 82nd year. He was born at Lancaster on May 29th, 1817, and for some years was in business in Liverpool as a ship painter. With him passes away probably the last of the old school of collectors of British *Lepidoptera* in the northern counties of England, amongst which the names of Gregson, Greening, Hodgkinson, and N. Cooke were prominent, a group that undoubtedly did much to investigate the British Fauna, and to elucidate the life histories of many species. Like most of his colleagues—or shall we say rivals?—Gregson was a man of great powers of endurance, and in this lay much of the secret of his success. He appears to have commenced writing so long ago as 1842, when he published a note in the "*Annals of Natural History*" on that essentially Liverpool insect *Nyssia zonaria*, and he seems to have written over 50 notes and papers considered sufficiently valuable to have secured a place in the Royal Society's Catalogue of Scientific papers, but these are exclusive of innumerable shorter contributions to the various periodicals. He took a warm interest in the Natural History Societies of his district, and at one time, as secretary of one of them, issued reports of the meetings lithographed by himself, the orthographical peculiarities of which caused him to be good-humouredly bantered by some of his southern brethren, a proceeding which he resented. The secretive side of his nature in matters entomological, and which was largely shared by many collectors of the time, also brought him into wordy conflict, and notably the almost historic *coup* made by him in buying up certain birch trees in North Wales, believed to

contain the pupæ of a rare "clear wing" and getting them sent on by rail to his own premises, a proceeding said to have had a disappointing *finale*. He was accustomed to relate how, on one occasion, being out after rabbits and without a net, he *shot* a *Colias Edusa*, a prize up north. He amassed a magnificent collection, wonderfully rich in varieties and aberrations, and this he sold in 1888 to Mr. Sydney Webb, his eyesight having failed: it was estimated to contain approximately 28,000 specimens. But he immediately started afresh and had formed another collection of about 5,500 specimens after he had turned 72, and we are told that his sight practically recovered. He was a keen naturalist in a wider sense than a collector of British *Lepidoptera*. At one time he published a list of the *Coleoptera* of his district. Attached to his house for over 35 years was a tame African eagle, which acted as a watch-dog. In later years he lost much of his former testiness, and was a pretty constant attendant at the meetings of the band of entomologists at Liverpool presided over by Mr. Capper. He was thrice married and had a large family. It may truly be said that he had in him all the requirements for a scientific entomologist, but perverted by educational deficiencies in the first instance, combined with an excess of egotism, this latter largely being a corollary from the former.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *January 16th, 1899.*—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. R. C. Bradley exhibited two drawers from the type collection which had been filled, one with *Tortrices* principally from Dr. P. B. Mason's collection, the other with *Pyræles* from his own collection and that of Mr. F. W. Moore. Mr. P. W. Abbott, a bred series of *Camptogramma fluviala* from Devonshire, also *Heliothis armigera* and *Leucania vitellina* from the same place. Mr. Bethune-Baker, a box full of *Lycanids*, including forms of *Icarus*, *Bellargus*, and *Corydon* from many localities in Europe and Turkestan.

February 6th, 1899.—ANNUAL MEETING.—The President in the Chair.

The Annual Reports of the Council, Librarian, and Treasurer, were presented; that of the Treasurer showing a smaller balance in hand than last year. Mr. G. T. Bethune-Baker, F.L.S., F.E.S., was re-elected President, and Mr. P. W. Abbott, Vice-President for the ensuing year; and the other officers as follows:—Treasurer, Mr. R. C. Bradley; Secretary, Mr. C. J. Wainwright, 2, Handsworth Wood, Handsworth; Librarian, Mr. A. H. Martineau; and other Members of the Council, Messrs. G. H. Kenrick, F.E.S., W. Harrison, H. Willoughby Ellis, and H. J. Sands. —COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *January 26th, 1899.*—ANNUAL MEETING.—Mr. J. W. TUTT, F.E.S., President, in the Chair.

A very satisfactory balance sheet was adopted, and the Council's Report, giving a *résumé* of the past year's work, having been read, the following gentlemen were declared elected to fill the various offices of the Society:—A. Harrison, F.L.S., F.E.S., &c., President; Dr. Chapman, F.Z.S., and J. W. Tutt, F.E.S., Vice-Presidents; T. W. Hall, F.E.S., Treasurer; H. A. Sauzé, Librarian; W. West, Curator; Stanley Edwards, F.L.S., F.E.S., and Henry J. Turner, F.E.S., Hon. Secretaries; R. Adkin, F.E.S., F. Clark, H. S. Fremlin, F.E.S., M.R.C.P., W. J. Lucas, B.A., F.E.S., H. Moore, A. M. Montgomery, and R. South, F.E.S., Council. The President then read his Address.

February 9th, 1899.—MR. A. HARRISON, F.L.S., President, in the Chair.

Mr. Russell exhibited a specimen of *Plusia moneta* taken at Southend near Catford in July, 1898; it was noted how rapidly the species was spreading. Mr. Adkin, a series of *Hadena pisi* from Aberdeenshire, with S. English forms for comparison; they were of a blackish-brown or dull purple, showing a strong contrast to the red English form. Mr. Lucas, a series of *Rhyarobia (Panchlora) maderæ* taken at Kew Gardens, in a package received from the Belgian Congo, and contributed notes on its distribution. Mr. Main, specimens of the brilliant Coleopteron, *Aspidomorpha sanctacrucis* from Bombay, which had been preserved in a dilute solution of formalin. A discussion ensued as to the amount of formalin in the solution, and also as to its action; it was thought that no more was necessary than just sufficient to sterilize the water, say 1%. Mr. Harrison, a bred series of *Pseudoterpna pruinata (cytisaria)* from New Forest larvæ. Mr. Fremlin read a note received from Mr. Chadwick, of Devonshire, giving an account of an observation of *Amphipyra pyramidea* swimming across a stream at least thirty yards wide. In the discussion which ensued Mr. Tutt and others gave various instances of the swimming capabilities of several species of *Lepidoptera*. Mr. Chapman then read a paper, entitled, "Some Points in the Evolution of the Lepidopterous Antennæ," illustrating his remarks by blackboard diagrams and numerous figures of antennal sculpture. A discussion took place, and it was considered that the paper was one of the most important of the series of evolutionary studies which Mr. Chapman had for some time been contributing to various societies and magazines.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *February 15th, 1899.*—MR. GEORGE H. VERREALL, President, in the Chair.

Mr. James E. Collin, of Sussex Lodge, Newmarket, was elected a Fellow of the Society.

Mr. B. A. Bower exhibited perfectly black melanic examples of *Boarmia abietaria*, Hb., bred from ova laid by a female of the ordinary Box Hill form, which was captured on July 9th, 1897. They were part of a brood of seventeen, seven of which were of black aberration; and for comparison with them, he showed specimens from Box Hill, South Devon, and the New Forest. Mr. Blandford, some lumps of common salt burrowed by larvæ of *Dermestes vulpinus*, to which he had incidentally referred in a letter just published in "Nature." They were sent to him by Sir H. T. Wood, Secretary of the Society of Arts, who received them from a correspondent writing from a preserved-meat factory in Australia. It was a mistake

to suppose, as this correspondent had done, that the larvæ burrowed in the salt for the sake of obtaining food; he himself had on various occasions called attention to the depredations of *Dermestes vulpinus*, arising from a habit the larvæ had of burrowing through different materials in order to find a shelter in which to undergo pupation, though this was the first time that salt, as a substance attacked in that way, had come under his notice. Mr. J. J. Walker, in remarking upon the exhibit, said he believed one of the earliest references to injuries caused by *Dermestes* was to be found in "The Last Voyage of Thomas Candish," published in Hakluyt's Collection of Voyages, where there was an interesting, if somewhat exaggerated, account of certain worms which, bred from a stock of dried Penguins, proceeded to devour the whole of the ship's stores, and then to gnaw into the timbers, creating great alarm lest the ship should spring a leak. The voyage took place in the year 1593; and the worms, he thought, could only have been the larvæ of *Dermestes vulpinus*, or some closely allied species. Dr. T. A. Chapman read a "Contribution to the life-history of *Micropteryx* (*Eriosephala*) *allionella*, Hübner."

March 1st, 1899.—The President in the Chair.

Mr. G. J. Arrow, of the British Museum (Natural History); Mr. G. B. Chalcraft, of Leicester; Mr. C. E. Collins, of Stoneham, Calcot, Reading; Mr. Percy W. Farmborough, F.Z.S., of Lower Edmonton; Mr. Montague Gunning, of Narnborough, Leicester; Mr. Harry Moore, of 12, Lower Road, Rotherhithe; and Mr. H. S. Woolley, of 7, Park Row, Greenwich; were elected Fellows of the Society.

Mr. J. J. Walker exhibited a specimen of a rare British beetle, *Quedius longicornis*, Ktz., recently taken at Cobham Park, Kent. Mr. M. Jacoby, a Halticid beetle from Sumatra, of the genus *Chalanus*, Westw., and called attention to the remarkable position of its eyes, these organs being placed at the end of two very distinct lateral processes of the head, somewhat resembling the stalked eyes of crabs and other *Crustacea*. He said this character was peculiar to the male sex, and was very exceptional in *Coleoptera*, not being met with in any other genus of *Phytophaga*, and only occurring in a few *Anthribidae*, and in isolated cases in one or two other families. He also showed a beetle from Peru, which was sent to him in a collection of *Phytophaga*, and which, superficially, was very like certain members of that group; but from the structure of the antennæ and other characters, it appeared to be out of place in the *Phytophaga*, and probably belonged to some other family. Mr. Gahan remarked that this beetle, to whatever family it might prove to belong, was very interesting, not only from its structural peculiarities, but also from the fact that it had the colour and markings characteristic of certain species of *Galerucidae*, a family to which it undoubtedly was not in any way closely related. This fact seemed to show that it was a mimetic form, and thus helped to explain the present obscurity surrounding its affinities. Mr. J. J. Walker read a short extract from the account given in "The Last Voyage of Thomas Candish," to which he had referred in the course of his remarks on Mr. Blandford's exhibit at the previous meeting. Mr. G. J. Arrow contributed a paper "On Sexual Dimorphism in Beetles of the Family *Eutelidae*," and sent for exhibition a series, including both sexes, of six species of *Anomala*, selected to illustrate the subject of his paper.—J. J. WALKER and C. J. GAHAN, *Hon. Secretaries*.

BRITISH DIPTERA UNRECORDED OR UNDESCRIBED BY ENGLISH AUTHORS.

BY R. H. MEADE, F.R.C.S.

(Continued from page 33).

HELOMYZA INORNATA, LW.

Thorax and abdomen testaceous; antennæ yellow with a short haired arista; thorax covered with very minute black hairs and punctures, the ordinary bristles being small; scutellum ochreous, covered with minute hairs; abdomen with dark edges to the segments; legs yellow with the distal ends of the tibiæ and the last four joints of the tarsi tinged with brown; wings with the transverse veins nebulous, but the ends of the long veins unclouded. Length, 5–6 mm. I found this rare species in Nab Wood, near Bingley, Yorks.

HELOMYZA FÆDA, LW.

pectoralis, LW. ?

The colour of this species is also yellowish-brown; antennæ yellow with a long haired arista; thorax marked with sub-distinct brown stripes, and covered with minute black hairs; ordinary bristles long, and seated upon black spots; scutellum yellow with brown sides and pale yellow stripe down the centre, which is quite smooth, while the sides have minute black hairs upon them; abdomen marked with transverse black lines; legs including the tarsi quite yellow; wings brownish with a thick and dark costa; the ends of the second, third and fourth long veins, as well as the transverse veins, nebulous. Length, 8 mm.

I found both sexes at Newton, near Bicester, Oxon.

ALLOPHYL ATRICORNIS, LW.

Helomyza atricornis, Mgn.

This species forms a connecting link between the *Helomyzinæ* and *Blepharopterina* of Loew. It possesses the oval third antennal joint, and the haired arista of those species in the former group, and the humeral bristle and smooth unpunctured thorax of the species in the latter one. The colour is yellow or testaceous; frontal space ochreous; face pale yellow; antennæ with third joint black; oral setæ one on each side; abdomen marked with narrow transverse black lines; legs quite yellow with the exception of the last two tarsal joints which are fuscous; wings clear, veins quite unclouded; costal setæ long but rather far apart. Length, 4 mm. I found a specimen of this fly at Richmond in Surrey in 1889, and another at Windermere in 1892.

This species must not be confounded with the *Heteromyza atricornis*, Mgn., which is quite distinct.

SCOLIOCENTRA VILLOSA, Mgn.

In this species the frontal space is ochreous, the face yellow with a whitish glimmer; antennæ rufous with a very long bare arista; oral setæ two and long; thorax with dorsum and sides ash-grey, with rufous shoulder points, and covered with long, soft black hairs; scutellum yellow and nude; abdomen red, with long

black hairs; hypopygium small; legs long, brown and hairy; the spurs at the end of the middle tibiæ crooked; tarsi long, with brown ends; wings flavescent and long, the costal setæ long but few in number. Length, 7 mm. I have only seen one example of this species which is in Mr. Dale's collection.

BLEPHAROPTERA FLAVICORNIS, Lw.

This small fly has a pale grey thorax and scutellum, and a rufous abdomen. Eyes large and round; antennæ red with a rather short arista; oral setæ two; thorax with the sides lighter; abdomen with a large round hypopygium; legs yellow with the last three tarsal joints nigrescent; terminal joints in front legs enlarged; wings with a small stigma and few and small costal setæ. Length, 3—4 mm. I have only seen one specimen which was taken by Mr. Billups at Chobham.

BLEPHAROPTERA HUMERALIS, Ztt.

This small well marked species has the frontal space yellow with vertex grey; face pale yellow; antennæ with the third joint very large and round, yellow, with the upper part brown; oral setæ one on each side; thorax yellowish-grey with pale shoulder points, scutellum yellow with the base grey in the female; abdomen fuscous with the apex and middle rings often red; legs rufous with the tarsi nigrescent and hairy; the femora are all thickened; wings with the costa armed with few and small setæ. Length, 3—4 mm. I found a female at Rawdon, near Leeds, in 1881.

TEPHROCHLAMYS MAGNICORNIS, Lw.

This has the frontal space red, with white margins, and rather narrow, occupying not more than one-third of the width of the head in the female; face pale; antennæ large and rufous, with a slender bare arista not thickened at the base; oral setæ one and sometimes more on each side of the mouth; palpi yellow; thorax bluish-grey, covered with minute black hairs, and marked with two sub-distinct dark stripes; there is one bristle upon the shoulder point, and three in each of the longitudinal rows on the hinder part of the thorax; scutellum pale red; abdomen red and unmarked; legs yellow with dark tarsi; wings slightly brown with a long auxiliary vein which leaves a large yellow stigma. Length, 6—7 mm. I have two specimens; one I took myself near Bradford in 1879, and the other was found by Mr. Beaumont at Pitlochry in Perthshire in 1892, both are females, the only sex known to Loew.

THELIDA OCULATA, Fln.

Thelida filiformis, R. Dsv.

Heteromyza oculata, Fln., Hal.

Heteromyza atricornis, Mgn., Lw.

This interesting and peculiar species was first noticed and described by Fallén in 1825. He did not place it in a genus by itself, but associated it with another species possessing different characters in his genus *Heteromyza*. R. Desvoidy met with it apparently without knowing that Fallén had described it, and placed it in a new genus named *Thelida**, which he characterized as being similar to his genus

*Essai sur les Myodaires, p. 655 (1830).

Leria with the addition of having the forehead and face narrowed (*rétrécis*), and the abdomen filiform; he named the species *filiformis*. Meigen gives Fallén's description and name to this fly, and like him places it together with some other species in the genus *Heteromyza*; he does not appear to have known it himself however, and one of the species which he places with it and names *H. atricornis* is doubtless only the female of the same fly (*oculata*). Loew removed the other species associated with it, and reserved the generic name of *Heteromyza* for this species only, to which he has given Meigen's name of *atricornis*, though Fallén's title of *oculata* has the right of priority. Loew has taken no notice of either R. Desvoidy or Haliday, and he must have overlooked the clear description given by the latter of both sexes, in the Entomological Magazine, vol. i, p. 168 (1833). Neither Walker nor Verrall mentions this species, the male of which is so well marked; but I have two specimens, which are easily known by their large eyes and narrow hairy bodies; one of these was found by Mr. Billups at Bromley, and the other was given to me some years ago, together with other flies, by Mr. Verrall, labelled Inveran, 1880, but unnamed. I have not seen the female, but its description corresponds very closely with that of *Tephrochlamys magnicornis*, the chief point of difference being the colour of the antennæ.

DRYOMYZA ZAWADSKII, Schum.

This species is closely allied to *D. flaveola*, F., but differs by being darker and more dusky in colour; the antennæ have the third joint rather longer and blacker; the abdomen is of a darker brown, the wings with a brown instead of a yellow tinge, with a yellow stigma, and the legs are darker. I have only seen one specimen of this fly which was given me by Miss Prescott-Decie and captured at Brockleton in Gloucestershire.

PHÆOMYZA NIGRIPENNIS, F.

This resembles the more common species of this genus (*P. fuscipennis*) in size and most other respects, but is generally rather larger and darker in colour and has the thorax marked with five subdistinct instead of four stripes. The characteristic points, however, by which it may be at once distinguished are that the forehead is glistening instead of dull in front, and the face is very oblique, so that the head is almost triangular, the epistome and chin being wanting; while in *P. fuscipennis* the face is nearly straight, the chin large, and the epistome prominent. This rare fly was also captured by Miss Prescott-Decie, at Chagford, Devon, in 1888.

SCIOMYZA DUBIA, Flin.

This little fly has the antennæ yellow, with the third joint half black; the arista is bare; palpi pale; thorax brown with grey pubescence; abdomen reddish; wings clear, with transverse veins sometimes slightly nebulous; and legs yellow. This species may at once be known by the half blackened third antennal joints. Length, 4—5 mm. I found it near Ulverston in 1886, and Mr. Beaumont sent me a specimen caught near Wolverhampton in 1893.

PALLOPTERA AMBUSTA, Mgn.

This well marked little species has a yellow striped thorax and a shining black

abdomen. The stripes upon the thorax vary very much in width; in pale varieties there are only two narrow central ones extending all the length of the dorsum; while in some dark specimens there are four broad ones which sometimes cover the whole back; the scutellum is yellow, sometimes with a central dark stripe; the apex of the abdomen is tinged with yellow; the legs are yellow; the wings have a dark streak on the upper margin, and the cross as well as the long veins are marked with brown. Length, 3—4 mm. I have only seen one specimen which I captured near Bradford in 1889.

PHYTOMYZA NIGRIPENNIS, Flin.

This, one of the largest species in the genus, is of a brownish-black colour; the head is black, face rather oblique; antennæ and palpi black; halteres white; abdomen brown with apex glistening black, and a white streak on the edge of the previous segment; wings nigrescent; legs black. Length, 4 mm. Mr. Beaumont captured this fly at Oxshott in 1894.

PHYTOMYZA ZETTERSTEDTII, Schiner.

This is very similar to *P. flavoscutellata*, Flin., and may be only a variety of the same. It differs from it by having the scutellum grey instead of yellow with only a pale mark down the centre; the femora also are marked with black or grey on their upper surface instead of being quite yellow. Length, 2 mm. A specimen of this fly emerged from soil in which some cauliflower plants injured by the larvæ of *Phorbia floccosa*, Moq., had been sent to me from Dalkeith.

OSCINIS FRIT, L.

This little shining black species has the head, face, palpi, proboscis, and antennæ black; the arista is bent in the middle and covered with pubescence which in certain lights has a white glimmer; the halteres are white; the legs are black with the tarsi yellow all but the last joints of the hind legs. Length, about 1½ mm. A number of these little flies were sent to me some years ago by the Rev. O. Pickard-Cambridge, which he had found in a granary in Dorsetshire in which (I think he said) barley had been stored.

Bradford: January, 1899.

ON A VARIETY OF *SCOPARIA DUBITALIS*, Hb. (Pl. I).

BY HERBERT FORTESCUE FRYER.

Collecting at Eastbourne in the early part of last summer I was compelled by an almost continuous wind to seek such sheltered spots as could be found.

One of these sheltered spots deserves perhaps a short description owing to the occurrence there of a pale *Scoparia*, which I was unable to identify, and which I thought might possibly be a new species.

The locality consisted of a sort of crater in a hillside which may perhaps at some time or other have been quarried. At the top was a nearly perpendicular face of bare chalk about 10 feet in height: below, a slope of some 40°, consisting of loose fragments, the detritus apparently of the rock above: and at the bottom, where Nature had been able to bring more agents to bear in the formation and accumulation of organic matter, was the ordinary soil of the district.

The vegetation of this somewhat unpromising looking slope consisted largely of *Lotus corniculatus*, a species of *Brassica*, and a wiry grass—a *Festuca* of some sort.

Besides the pale *Scoparia* the species I took here were neither many nor rare, but were most of them well adapted to their light-coloured habitat, as for instance *Melanippe galiata*, *Elachista argentella*, and a light form of *Scoparia dubitalis*—of the latter I took specimens varying through several shades, but all lighter than the ordinary form.

The pale form alluded to above I may describe thus:—18-20 mm. Fore-wings creamy-white: lines obscurely indicated by narrow ochreous suffusions: 8-shaped discal mark absent. Hind-wings very light fuscous, cilia white.

Had I not taken the light variety of *Scoparia dubitalis* in company with the above, I should have undoubtedly considered I had taken a new species. However, on my sending specimens to Mr. Barrett he informed me that he considered my capture a variety only of *S. dubitalis*, but that it was quite new to him. The intermediate form, known as *ingratella*, was not scarce.

Should an opportunity occur this spring I hope to search for the larva which, as far as I am aware, is undescribed.

Until the larva has been found and the species (?) bred, I am afraid I must rest content with having taken a variety only, but a variety which is extraordinarily well adapted for concealment among the stones of the chalky slope on which it occurs, and to which its peculiarly soft chalky whiteness and faint ochreous shades assimilate it in a remarkable degree.

EXPLANATION OF PLATE I.

Figs. 1 and 2, light forms; 3, ordinary form; 4, pale variety.

The Priory, Chatteris:

March 13th, 1899.

DESCRIPTIONS OF THE LARVA AND PUPA OF *CNEPHASIA*
SINUANA, STPH.

BY EUSTACE E. BANKES, M.A., F.E.S.

Seeing that no descriptions of *Cnephasia sinuana*, Stph., in its earlier stages have, so far as I am aware, ever been published, the following will perhaps be found useful. That of the larva was made on May 21st, 1896, from specimens, about full-fed, which Dr. H. H. Corbett had kindly sent me from near Doncaster on May 16th.

LARVA.

Length, 18 mm. *Greatest breadth*, about 2·5—2·75 mm.

Head highly polished, orange-ochreous; upper mouth parts reddish; ocelli black, polished. *Prothoracic segment* of nearly equal breadth with head, but strikingly narrower than the mesothoracic and following segments, and bearing a highly polished dorsal plate, which varies greatly in colour from black, through orange-ochreous, to pale ochreous, and is divided across the centre by a pale line, each half of the plate being margined with black on both sides. The *thoracic* and *abdominal segments* viewed together form a rather stout mass, tapering gradually towards the anal segment, smooth, shining, semitransparent, dirty pale smoke-grey, locally tinged with green, especially before the middle, and along the back, where the dorsal vessel shows through as a conspicuous green line. In the male larva the embryo *testes* are seen through the back of the fifth abdominal segment as two dark oval spots. *Anal plate* varying in colour from blackish-brown to dirty pale ochreous, very lightly marked with brown. *Warts* and *spiracles* appearing as black polished dots standing in polished smoky spots, and emitting pale bristles. *Ventral surface* a little paler than dorsal, and not so much tinged with green, with smaller black polished warts. *Legs* highly polished and horny, black, with narrow pale rings. *Prolegs* semitransparent, watery-white, externally barred with blackish.

Larvæ of different sizes were examined, but, except in the colours of the prothoracic and anal plates, which vary greatly in different individuals, all were very similar.

The larva lives in a loose silken web spun among the flowers of *Scilla nutans*, feeding on the flowers themselves, and also on the green unripe seeds, and occasionally, in confinement, nibbling the stalk: when irritated, it ejects from its mouth a drop or two of a very bright green fluid. I learn from Mr. G. Elisha that from spun-up flowers of *Chrysanthemum leucanthemum*, collected by himself in a wood in North Kent, he has occasionally bred a few examples of *sinuana* together with many of *pasivana*. His specimens were identified by the late Mr. J. Sang, who knew the true *sinuana* well.

PUPA.

The following description was made on May 26th, 1896, from two

pupæ, resulting from the larvæ received from Doncaster, which had assumed that state a few days previously ;—

Length, 9—10 mm. *Greatest breadth*, 2·8 mm.

Skin smooth and polished, with only a few scattered pale weak hairs. *Eyes* showing as large distinct black spots. *Antennal cases* of almost equal length with wing-cases. *Head* and *thoracic segments* brownish-orange. *Wing-cases* pale brownish-orange, reaching to just beyond the middle of the fifth abdominal segment. *Abdominal segments* dark brownish-orange. All the abdominal segments, with the exception of the first two, have, across the back, two parallel rows of raised spikes, one near the anterior margin, the other just posterior to the middle of the segment : they are not continued on the sides, and are less strongly pronounced on the earlier segments mentioned, but become more and more so towards the anal extremity, though on the last segment the spikes in the posterior row are very small. At the anal extremity there are, dorsally, two strong stout spikes, pointing upwards, and with recurved tips, and a few rather long pale hairs arise near these spikes. *Ventral surface* pale brownish-orange. The *free abdominal segments* are the 4th, 5th, and 6th, in the male, and the 4th, 5th, 6th, and 7th, in the female.

The pupæ were enclosed in slight loose white silken cocoons, spun, in confinement, among the flowers and stems of the wild hyacinths. The moths, five in number, emerged June 12th—15th, 1896, but the other larvæ only produced ichneumon flies, which have not yet been identified.

Cnephasia sinuana, Stph., had not been recognised with certainty as occurring beyond the limits of Great Britain, where it is taken sparingly and very locally in woods, until three years ago, when I noticed in the Zeller collection a long and fine series of continental specimens, about the identity of which Zeller appears to have been in doubt. His plan was to ticket one of the specimens in the series with the name that he applied to the whole series, but although two individuals bear name-tickets, both names have a “?” attached : one is labelled “? *Cnephasia sinuana*, Wks., t. 2, f. 6” [the reference is to the figure in Wilkinson’s *British Tortrices* (1859)], while the other is ticketed “*asinana*, H., 101, ? Num kleine *chrysanthemana* ?” (*sic*). Mr. J. H. Durrant, who has kindly sent me all the data known about the specimens in the series, informs me that *Tortrix asinana*, Hb., which is not represented in the Zeller collection, is quite distinct from *sinuana*, Stph. From the few individuals that bear locality labels, we learn that *sinuana* has occurred in Austria (Bameralp in Styria, *Zell. Coll.*), Germany (Brunswick, *von Heinemann*), Russia (Finland, *Tengström* ; Livonia, *Lienig* ?), and Switzerland (Bergün, *Zeller*).

The Rectory, Corfe Castle :

February 28th, 1899.

MOTHS TAKEN IN NORWAY, 1898.

BY T. A. CHAPMAN, M.D., F.Z.S., AND R. W. LLOYD, F.E.S.

The *Phalænæ* taken during our Norway excursion do not present many points of interest, but there may be a few items worth noting.

The *Sphingidæ* were represented by *Smerinthus ocellatus* and *Macroglossa bombylifformis*, taken at Saeterstoen. This portion of Norway possesses thirteen *Sphinges*, so that in this particular our record was very poor. Nor did we do much more in the *Noctuidæ* and others. *Euthemonia russula* was frequent, with very broad border to the hind-wings. *Acronycta leporina* and *auricoma* were found seated on trees, and one very large and dark *A. menyanthidis*. *Anarta cordigera* was seen flying on the great moor, and *Demas coryli* seated on birch trunks. *Sciapteron tabaniforme* was found emerging from an aspen trunk; both on this tree, and on others where its burrows existed, it appeared to like the bark round injured portions of the trunk. *Procris statice* was frequent.

About thirty species of Geometers were taken at Saeterstoen, only about a sixth of the species recorded from this district. *Iodis putata* was not uncommon; *Macaria notata* and *signaria*, *Cidaria ser-raria*, *Scoria dealbata*; the others were all common British species except *Gnophos dilucidaria*. But the prevalence of *Melanippe hastata* here and at Bossekop, so as to almost be a feature of the landscape, as one disturbed vacciniums and birches, deserves mention; at Saeterstoen, the form was an ordinary English one, but at Bossekop the majority were a small dark form, with excess of black markings, such as is more frequent in Scotland.

At Bossekop a larger proportion of the available species were taken; the only *Trochilium* recorded from the district—*culiciforme*—was found at Kaafjord, and the only *Zygæna*—*exulans*—occurred everywhere there.

Setina irrorella, *Nemeophila plantaginis*, and *Phragmatobia fuliginosa* were met with, *N. plantaginis* being common, usually of the form *hospita*, with few black markings, but occasionally an almost English var. occurred. They were very worn. The two recorded *Arctias* we did not see.

Saturnia pavonia, from another district of Finmark, was represented by a specimen given to us on board ship; where also we saw several nice *Noctuæ* taken at sugar by another gentleman, but we are not quite sure of the locality; he had *Hadena rectilinea*, *H. dentina*, one or two very fine forms, an *Agrotis*, probably *speciosa*, &c.

Our most interesting capture was *Pachnobia carnea*, of which several specimens were found flying during the day, and one at rest on a trunk. *P. hyperborea* was found at rest on trees, and flew during the day, and more freely in the evening, but seeing it and catching it were different matters. *A. conflua* was abundant on the wing in the evening in several places, but much worn, odd specimens were seen on flowers during the day. *Anomogyna latabilis* flew freely about 9 p.m. in the woods behind Tongen, and was common on the rocks and tree trunks there, only males were seen, and these nearly all worn. *Anarta melaleuca* was frequently seen on the wing, but we saw no other *Anartas*, somewhat to our disappointment. *Plusia Hochenwarthi* was abundant in many places on the lower grounds, and one specimen of *Plusia parilis* was taken close to Bossekop.

Of Geometers we took 21 of the known 50 species. *Coremia munitata* was abundant everywhere. *Pygmaena fusca* abounded in a few marshy spots near the shore. *Psodos coracina* was widely distributed. *Gnophos sordaria* was common near Bossekop, the empty pupa cases (we were too late for full ones) were frequent under stones on the raised beach. *Emmelesia minutata* was common at Bossekop, and swarmed at Hammerfest. *Coremia cæsiata* was a great pest, as it often is with us. Several *C. flavicinctata* were taken. Two specimens of *C. nobiliaria* were taken at Kaafjord, this seems to be an extension of its northern range, as Tromsø appears to have been its previously known limit. *C. polata* was taken at Bossekop. *C. Sabini*, var. *frigidaria*, was abundant on rocks on the Tyven at Hammerfest, but not easy to capture. At Kaafjord *C. populata*, *elutata*, and *impluviata*, with swarms of *cæsiata*, flew in the evening along with *montanata*; the latter varied a good deal to pale and colourless forms, but a majority might have been English specimens. An interesting species flying in the early evening at Bossekop was *C. abrasaria*; in some spots it was extremely abundant, flying among *Betula nana*, where that plant grew as a low scrub in boggy places. *Eupithecia scoriateda* was taken at Kaafjord.

Of the plumes, *Leioptilus tephrodactylus* was taken at Saeterstoen, and *L. osteodactylus* at Torghatten. At Bossekop *L. scarodactylus* and *Platyptilia Zetterstedtii* were common in suitable localities on the low ground; *P. tesseradactyla* was much more rare and localized; whilst amongst *Tussilago farfara* at Kaafjord we were rather surprised to find some specimens of *P. gonodactyla*.

Botys inquinatellus was the only abundant pyrale, but *Catastia*

aurociliella was frequent, and one *B. decrepitalis* was taken. One specimen of *P. purpuralis* also occurred. *Scoparia sudetica* was common at Bossekop, and abundant at Hammerfest, *S. petrophila* also occurred at Bossekop, where *Pempelia fusca* and *Myelois annulatella* were also taken.

Crambus furcatellus, *myellus*, *ericellus*, and *dumetellus* were taken at Bossekop, where, however, *perlellus* was the most abundant species.

Of *Tortrices* and the *Micros* our list is scanty. The following species were taken at Bossekop or Hammerfest:—*Tortrix ministrana*, *Forsterana*, *viburnana*, *rubicundana* (?), *Penthina turfosa*, *lediana*, *metallicana*, *mygindana*, *bipunctana*, *lacunana*, *Conchylis notulana*, *Euchromia rufana*, *E. quadrana*.

The abundance on the moors of *P. metallicana* and *bipunctana* was remarkable, both varying into a good many forms, often difficult at once to determine in the field.

Incurvaria Ehlmanniella, *Scardia tessulatella*, *Coleophora argentula*, *vitisella*, *Gelechia infernalis*, *continuella*, *diffinis*, often swarming, *terrella*, *viduella*, *Swammerdamia conspersella*, *griseocapitella*, *Tinea bistrigella*, *rusticella*, *cloacella*, *fulvimitrella*, *Laverna Schrankella*, *Cecophora stipella*, *Lithocolletis vacciniella*, *Elachista Holdenella*, *albifrontella*, *Argyresthia sorbiella*, *pygmaella*, *certella*.

The larvæ of *Oporabia dilutata* and *Brephos parthenias* are the only ones noted of which imagines were not seen.

February, 1899.

DRURYA ANTIMACHUS, DRURY, var. *GIGANTEA*, var. nov.

BY WILLIAM WATKINS.

♂. Expanse, 9½ inches.

Differs from the typical form by the large black bars in the cell of the anterior wing being confluent, and the basal streak under the cell is very much more intense; from its extremity is continued a well defined black line, running right through the fulvous ground colour. The spots in the posterior wing are nearly twice the size of those on ten typical specimens examined, and instead of being mostly round they are wedge-shaped with serrated upper edge.

Generally the specimen is much more deeply marked than any others I have seen, and at first sight its differences are apparent, apart from its abnormal size, which is a full inch larger than in Drury's figure.

This interesting butterfly was recently received by me from Gabon, the same locality whence I received a female (Ent. Mo. Mag., 2nd ser., vol. iii, pl. V) seven years ago, and is in the Museum of Mr. H. J. Adams, of Enfield.

Eastbourne: March 30th, 1899.

COLEOPTERA COLLECTED IN FINMARK BY DR. T. A. CHAPMAN
AND MR. R. W. LLOYD.

BY G. C. CHAMPION, F.Z.S.

The *Coleoptera* collected by these gentlemen in Finmark, &c., in July last have been handed over to me for identification, unfortunately without any note of the circumstances of capture. I can therefore do no more than give a list of the species obtained. Those from Bossekop (lat. 69° 50' N.) only are enumerated.

Carabus catenulatus, Scop., *violaceus*, Linn., *Notiophilus palustris*, Duft., *Elaphrus riparius*, Gyll., *Dyschirius globosus*, Herbst, *Patrobus excavatus*, Payk., *Bembidium bruxellense*, Weem., *paludosum*, Dej., *bipunctatum*, Gyll., *doris*, Gyll., *Amara alpina*, Fabr., *apricaria*, Sturm, *Nebria Gyllenhali*, Schödh.

Ilybius guttiger, Er., *Agabus bipustulatus*, Linn., *lapponicus*, Thoms., *Hydroporus griseostriatus*, Aubé, *arcticus*, Thoms., *melanocephalus*, Gyll.

Hydrobius fuscipes, Er.

Leptusa analis, Gyll., *Aleochara succicola*, Thoms., *Bolitobius pygmaeus*, Fabr., *Tachinus humeralis*, Grav., *pallipes*, Grav., *Creophilus maxillosus*, Linn., *Quedionuchus laevigatus*, Gyll., *Philonthus succicola*, Thoms., *Stenus longitarsis*, Thoms., *labilis*, Er., *Anthophagus omalinus*, Zett., *Deliphrum tectum*, Er., *Geodromicus plagiatus*, var. *nigrita*, Müll.

Ips 4-pustulatus, Gyll., *Corticaria serrata*, Payk., *Byrrhus fasciatus*, Fabr.

Aphodius lapponum, Gyll., *fetidus*, Fabr.

Elatér nigrinus, Payk., *Sericosomus brunneus*, Linn., *Corymbites serraticornis*, Payk., *affinis*, Germ., *impressus*, Fabr., *holosericeus*, Fabr., *Campylus linearis*, Linn.

Podabrus alpinus, Payk., *Rhagonycha limbata*, Thoms., *Telephorus pilosus*, Payk., *Dasytes obscurus*, Gyll.

Cedemera virescens, Linn.

Rhagium inquisitor, Fabr.

Rhynchites betulae, Linn., *Otiorrhynchus maurus*, Gyll., *Hylobius abietis*, Linn., *Polydrusus undatus*, Fabr., *Erirrhinus æthiops*, Fabr., *Orchestes salicis*, Linn., *Scolytus pruni*, Ratz., *Myelophilus piniperda*, Linn.

Cryptocephalus labiatus, Linn., *Chrysomela marginata*, Linn., *Lina lapponica*, Linn., *alpina*, Boh., *Phyllodecta vitellinae*, Linn., *Eumolpus (Adowus) obscurus*, Linn.

Endomychus coccineus, Linn.

Coccinella 7-punctata, Linn., *5-punctata*, Linn.

Horsell, Woking:

February 3rd, 1899.

CRABRO PLANIFRONS, THOMS.: A SPECIES NEW TO BRITAIN.

BY R. C. L. PERKINS, B.A.

Recently, in examining the structure of the antennæ of the males of the various subgenera of the genus *Crabro*, I discovered that my series of examples of *Crabro cephalotes* was made up of two distinct,

but closely allied, species. One of these is the *Crabro cephalotes* of Shuckard, Smith, and Saunders, in their works on British *Hymenoptera*, the other is probably the *Crabro planifrons*, of Thomson, = *C. sexcinctus*, Wesm. Whether the latter is identical with the *C. sexcinctus* of Fabricius could hardly be determined without a careful examination of the type. The *Crabro sexcinctus* of Smith and Shuckard, is certainly only a variety of the ♂ of *C. cephalotes*, having a silvery instead of a golden pilosity on the clypeus, and I have myself several times met with this variety. It may be remarked that Wesmael, in his critical comparison of the ♂ of *cephalotes* and *6-cinctus* makes no mention of the curved hairs which spring from the apex of the basal tooth of the antennæ of the latter, nor yet does Thomson in his description of *C. planifrons*, although this is certainly one of the most distinctive characters of the species. Nevertheless, I suspect that the British insect is identical with this species, and may be distinguished readily from *O. cephalotes* by the following characters:—

C. CEPHALOTES.

♂. Distance between the first (basal) and second tooth of the antenna greater than that between the second and third. Between the first and second tooth there is a slight angular production (or minute tooth). This is best seen when the antenna is viewed from above.

First tooth without hairs.

♀. The 4-dentate apical margin of the clypeus with the outer tooth on each side not more remote from the nearest inner one than the two inner ones are from one another.

♂ ♀. Basal segment of the abdomen towards the apex decidedly less closely and regularly punctured.

Abdomen less black, the yellow bands, though generally more interrupted, being wider.

Face viewed from in front less wide across the eyes.

♂. Mandibles black, rarely with a yellow spot.

C. PLANIFRONS.

♂. Distance between first and second tooth of antennæ equal to that between second and third. The arch between the first and second tooth regular, not interrupted by a minute tooth in the middle.

First tooth with some long curved hairs at the apex.

♀. The 4-dentate apical margin of clypeus with the outer tooth on each side much more distant from the nearest inner one than the two inner ones are from one another.

♂ ♀. Basal abdominal segment towards apex very densely and regularly punctured.

Abdomen blacker, the yellow bands being narrower, generally entire in the ♀.

Face much wider across the eyes in proportion to its height.

♂. Mandibles largely yellow.

It may be added that the British examples of *C. planifrons* apparently attain a greater size than those of *C. cephalotes*, indeed, it is quite one of our finest Fossorial *Hymenoptera*. The pilosity of the clypeus appears to be normally golden in the latter, silvery in the former, which also generally has the mesothorax less distinctly strigose. This latter character is, however, evidently variable.

I have taken *C. planifrons* on the coast of Devonshire, and also in North Wilts, the two localities being vastly different in character. From this I infer that it will be found to be a widely distributed species, though less generally so than *C. cephalotes*, since Mr. Saunders informs me he has seen no other British examples, though he has the ♂ from Spain. I have taken *C. cephalotes* in the South, East, and West of England, and it is no doubt ubiquitous, forming its burrows in dead wood, while *planifrons* has been found forming large colonies in sandy soil.

Cambridge: *March*, 1899.

ENTOMOLOGY IN THE NEW FOREST DURING AUGUST, 1898.

BY THE REV. ALFRED THORNLEY, M.A., F.L.S.

I was fortunate in obtaining a locum tenency at Bramshaw, in the North of the Forest, during August of last year. The weather, on the whole, was very fine and dry, and I was able to work leisurely in a part of the Forest and neighbouring fields and plantations. As is so often the case, results at the time appeared small; but after-work on the material obtained has shown that many interesting species were taken. The *Hymenoptera* were most kindly taken in hand by the Rev. F. D. Morice, who carefully dissected out the male armatures of the species of *Sphecodes*, so as to render their identification quite certain. I am also greatly indebted to Dr. R. H. Meade, of Bradford, and Mr. P. H. Grimshaw, of the Edinburgh Museum, for kind help with the *Diptera*. I have still a number of *Orthoptera*, which up till now I have been unable to get named, and I shall be glad to send them to any Orthopterist who will undertake the task. I have to thank some kind friends at Bramshaw for permission to work in private grounds, which always yielded the best things. I have a number of unset specimens of *Hymenoptera* which I will gladly give to any one sending box and postage.

HYMENOPTERA.—*HALICTUS*: *quadrinotatus*, Kirby, several; *zonulus*, Smith, several; *leucozonius*, Schrank, abundant everywhere; *lavigatus*, Kirby, 4 ♂s of

this rare species; *subfasciatus*, Nyl., 1; *cylindricus*, Fabr., ♂s common; *tumulorum*, L., 1 ♂; *morio*, Fabr., 1 ♂; *leucopus*, Kirby, 2 ♀, 1 ♂; *villosulus*, Kirby, 2 examples. SPHECODES: *reticulatus*, Thoms., 10 examples, all ♂; *subquadratus*, Smith, 1 ♂; *puncticeps*, Thoms., 8 ♂; *similis*, Wesm., 2 ♂. ANDRENA: *Cetii*, Schrank, very common at scabious flowers in a private plantation, both ♂s and ♀s; *fuscipes*, Kirby, ♂ and ♀, common at heather; *denticulata*, Kirby, 1 ♀; *Afzelliella*, Kirby, 2 ♀; *Coitana*, Kirby, 2 ♀; *minutula*, Kirby, 3 ♀. *Nomada solidaginis*, Panz., common at heather. *Epeolus rufipes*, Thoms., common at heather. *Colletes succincta*, ♂s, common at heather. *Prosopis communis*, Nyl., 1 ♀; *Panurgus calcaratus*, Scop., 1 ♂. Lyndhurst. *Megachile Willughbiella*, Kirby, 1 ♀. *Mimesa bicolor*, Fabr., 1 example. *Ammophila sabulosa*, L. *Crabro cribrarius*, L.; *cephalotes*, Panz.

DIPTERA.—*Tabanus bovinus*, L., *bromius*, L.; *Therioplectes solstitialis*, Mg.; *Atylotus fulvus*, Mg.; *Chrysops cæcutiens*, L.; *Leptis tringaria*, L.; *Dioctria Reinhardi*, W.; *Laphria marginata*, L.; *Machimus atricapillus*, Fln., common; *Pipizella virens*, F.; *Chrysogaster hirtella* (= *Macquarti*, Lw.), *splendens*, Mg., *cæmeteriorum*, L., *chalybeata*, Mg.; *Chilosia scutellata*, Fln.; *Syrphus ribesii*, L., *luniger*, Mg., *corollæ*, F., *auricollis*, Mg., *balteatus*, De G., *cinctellus*, Ztt.; *Pipiza noctiluca*, L.; *Helophilus pendulus*, L.; *Catabomba pyrastris*, L.; *Xanthogramma ornatum*, Mg. (seen on two or three occasions); *Platychirus peltatus*, Mg.; *Rhingia rostrata*, L.; *Volucella pellucens*, L.; *Sericomyia borealis*, Fln., common, and in beautiful condition; *Eristalis pertinax*, Scop., *intricarius*, L., *horticola*, De G.; *Myiatropa florea*, L.; *Xylota sylvarum*, L., *segnis*, L.; *Syrirta pipiens*, L.; *Chrysoclamys cuprea*, Scop.; *Chrysotoxum festivum*, L.; *Conops 4-fasciatus*, De G., *flavipes*, L.; *Physocephala rufipes*, F.; *Oncomyia atra*, F.; *Sicus ferrugineus*, L.; *Myopa fasciata*, Mg.; *Echinomyia fera*, L.; *Tachina rustica*, Mg.; *Micropalpus vulpinus*, Fln.; *Olivieria lateralis*, F.; *Nemoræa radicum*, F.; *Myobia inanis*, Fln.; *Siphona geniculata*, De G.; *Dexia carinifrons*, Fln., *canina*, F., *vacua*, Fln.; *Prosenia siberita*, F.; *Dinera cristata*, Mg.; *Sarcophaga earnaria*, L.; *Lucilia cornicina*, F.; *Calliphora azurea*, Fln., a single specimen of this beautiful species; *C. sepulchralis*, Mg., *erythrocephala*, Mg.; *Graphomyia maculata*, Scop.; *Morellia hortorum*, Fln.; *Hyetodesia erratica*, Fln., *errans*, Mg.; *Spilogaster quadrum*, F.; *Hylemyia penicillaris* (var.), Zett., 1 ♂; *Degeeria blanda*, Fln.; *Sargus flavipes*, Fln., *cuprarius*, var. *nubeculosus*, Ztt.; *Dolichopus griseipennis*, Stan., *atratus*, Mg., *aneus*, L., *latelimbatus*, Mcq.

COLEOPTERA.—As usual in the month of August, *Coleoptera* were scarce, and though I had the pleasure of a day's hunting with the Rev. H. S. Gorham, we turned up very little. The only species of interest were the following:—*Triphyllus punctatus*, Fabr.; *Halysia conglobata*, L.; *Triplax russica*, L.; *Conopalpus testaceus*, Ol., one broken example; *Scaphidium 4-maculatum*, Ol.; *Liodes humeralis*, Kug.; *Lucanus cervus*, L., 1 ♀; *Geotrupes spiniger*, Marsh., *stercorarius*, L., *sylvaticus*, Panz.; *Balaninus venosus*, Grav.; *Agrius angustulus*, Ill.; *Crioceris asparagi*, L., I found specimens of this pretty beetle on every patch of asparagus I examined; *Aleochara mycetophaga*, Kr. (2).

HEMIPTERA.—My best take in this Order was a single specimen of *Plocionerus luridus*, Hahn. *Tropicoris rufipes* was common on trees; and *Campyloneura virgula* swarmed on shrubs, particularly hollies, possibly because there were so few

other shrubs about. *Pentatoma bacorum* (2), and some common *Phytoecori* and *Orthotyli*. A single specimen of *Iesus coleoptratus* was the only Homopterid taken worthy of remark.

LEPIDOPTERA.—Worn specimens of *Argynnis Paphia* were common, and one var. *Valezina* was taken. Altogether 23 species of butterflies were seen on the wing. *Gonepteryx rhamni* was especially abundant, whilst a single worn specimen of *Limenitis Sibylla* was taken. *Epinephels Egeria* was not common. In the *Heterocera* a few good things turned up, though I did not pay much attention to this Order. I found a fine, nearly full-fed, larva of *Acronycta alsi*, which a few days afterwards disclosed a large grub, probably the larva of a Tachinid fly, unfortunately it got too much knocked about on the railway journey, and was dead, and scarcely recognisable when I got home. A beautiful larva of *Acronycta aceris* was also found. In the Vicarage garden I caught flying one evening a single specimen of *Aventia flexula*.

Perhaps the most amusing incident of my sojourn in the Forest was the difficulty I found in obtaining specimens of the famous pest, the Forest fly, *Hippobosca equina*; I nearly returned home without any, and only succeeded in getting two.

South Leverton Vicarage, Lincoln:

February, 1899.

Butterflies at Locarno, April 6th: a warm corner.—The entomologist is often the sport of the weather, especially if he hunts for butterflies. This is especially enforced by the weather as I write (April 14th), the snow falling thickly and lying on the ground, but not deeply. It has been very cold for a day or two; it is perhaps fair to say that such weather is almost unprecedented for Locarno so late in the season. Preceding April 6th there had also been a very unusual weather phenomenon, viz., drought for two months, usually with warmth, but with a cold snap quite recently, both facts evidenced by camellias presenting a grand display of bloom, but with not a few flowers injured by the cold.

On the sands of the Maggia delta a Gelechiid was common; though of a grey colour, of similar tint to the sand, and without any apparent red tinting, it could just be seen when resting on the bare sand as a slightly rusty looking spot. At a height of 3500 feet above Locarno the snow was not only gone from south slopes but *Titanio Schrankiana* was flying freely amongst scrubby heather when the sun shone brightly.

Butterflies generally were scarce, except a few *P. Megara*, *L. sinapis*, and a sprinkling of other species; but on April 6th I came across a small grass slope directly facing the sun at about 3 p.m., of an area of perhaps one-tenth of an acre, to call it one quarter of an acre would certainly be to exaggerate its size; besides its aspect, its great attraction was that it was being irrigated, the drought elsewhere being in full force, grass still brown, and primroses that were flowering freely were unable to grow any stalks to the blossoms. On this little spot during fifteen minutes I verified the following 27 species of *Rhopalocera* on the wing, viz., *Papilio Pod-*

lirius and *Machaon*, *Rhodocera rhamni*,* *Euchloë cardamines*,* *Pieris brassicae*, *rapae*, *napi*, *Colias Edusa** and *Hyale*, *Leucophasia sinapis*,* *Melitæa Phæbe*, *Brenthis Dia** and *Selene*, *Argynnis Latona*,* *Vanessa Io* and *polychloros*, *Grapta c-album*, *Pararge Megæra** and *Egeria*, *Cænonympha Pamphilus*,* *Polyommatus Phlaas*,* *P. dorilis*,* *Lycana Icarus*, *Astrarche** and *Orion*,* *Nemeobius Lucina*, *Spilothyrus alcea*. Those with an asterisk in some numbers. The other butterflies met with in the neighbourhood about the same date were *V. urticae*, *polychloros* and *Antiopa*, *Anthocharis Belia*, *Thecla rubi*, *Syrichthus Sao*, *Thanaos Tages*. No doubt some of these would have been seen in the warm corner with the others, had a longer time been devoted to it. Though the species are all more or less common, the occurrence of so many species forming so large a proportion of those out at the time, within such narrow limits of time and space, so early in the season, seemed to me to be interesting.

Such occurrences as that of *Gnophos variegata* as larvæ and imagines on adjacent rocks are not uncommon, and illustrate the effects of the combinations of summer and winter that occur here, and the potency of aspect under such conditions.—T. A. CHAPMAN, Locarno: April 14th, 1899.

Diptera from New Forest and Sutton Coldfield, 1898.—Last year most of my collecting was confined to Sutton Coldfield; the only serious attempt outside that neighbourhood being a visit to the New Forest district with Mr. Wainwright for a few days, May 29th—June 5th. This was a disappointing trip as the weather was for the most part cold and ungenial, consequently insects scarce; still a few good things were taken. Among the *Tipulidæ*, *Dicranomyia stigmatica* (2) ♀, *Limnobia subtinctoria* (2) ♂ in Matley Bog. — *Asilidæ*: *Neoitamus cyanurus*, *Dioctria islandica*. — *Syrphidæ* were poorly represented, *Syrphus decorus* (1) being the best capture. *Cephalops auctus* (common), *Pipizella virens*, *Orthoneura brevicornis* (1), *Cheilosia antiqua*, *Volucella inflata*, Mr. Wainwright took eight on hawthorn bloom. *Chrysotoxum sylvarum* and *elegans*. — *Tachinidæ*: *Servillia ursina*, *Gymnochata viridis*, *Nemoræa casia* (1), *Exorista lucorum*, *Pelatachina tibialis*, *Degeeria collaris*, *Bothria cæsifrons*, this last species was the only one at all common. *Sarcophaga hæmorrhœa* (1), *Chyliza leptogaster* (1). A trip to Bournemouth was responsible for *Eutolmus trigonus* (8), *Cheilosia vernalis*, *Gonia capitata*, *Hydrotæa ciliata* (2), *Pelecocera tricolor* (2). A few hours in a sheltered lane at Swanage on a bitterly cold windy day produced: *Pipizella virens*, *Orthoneura nobilis* (1), *Chætolyga quadripustulata*, *Meigenia floralis*, *Polidea ænea*, *Hyetodesia signata*, and *Lasioptikhalma*. These, together with the *Hymenoptera* taken there, incline me to believe that Swanage would pay to work in favourable weather.

The principal captures at Sutton were as follows: *Pachyrrhina scurra* ♀, *Syrphus grossularia* (2), *Platyepeza infumata** (one in my garden), *Orthoneura elegans*, and *nobilis* (2), *Chrysogaster virescens*, *splendens*, *Cheilosia vernalis*, *Platychirus manicatus*, a specimen without the yellow spots on abdomen. *Criorrhina floccosa*, *oxyacanthæ*, *Brachypalpus bimaculata*,* *Chætolyga quadripustulata* (7),* *Macronychia polyodon* (1),* *Metopia rufitarsis* (5),* *Thryptocera* occurred commonly in my garden on Rhododendron leaves and turned out to be three species, *crassicornis*, *pilipennis*, and *minutissima* (1), that is if the two first

named are distinct, but I seem to have specimens running into one another. *Lawia brevifrons** one on wall, *Sarcophaga hamatodes laticornis* (2),* *hemorrhoea* (1). *Cynomyia alpina*, June and July in Sutton Park, August and September in my garden, about 40 specimens altogether. *Calliphora azurea* (4), *Graphomyia picta* (2), *Hyetodesia vagans* (1). *Chortophila albescens*, common on walls, popping in and out of burrows of Aculeates. *C. sylvestris*,* 3 ♀s of this very rare species. *Pegomyia latitarsis* (1),* *Cælogyia mollissima*,* *Norellia spinimana* (10), *Hydromyza Falleni* (24), *fraterna*.* *Toxoneura muliebris*, *Gonyglossum Wiedemanni* (1), *Acidia cognata*, *heraclei*, *lychnidis*. *Balioptera tripunctata contaminata*. Drotwich was responsible for *Platypeza atra** and *Chetolyga quadri-pustulata*, this species which I have not taken before was met with in three distinct counties. Several Tachinids and Anthomyids remain to be identified, so that on the whole the season has been fairly good. Those marked * are new records for the district.—RALPH C. BRADLEY, Sutton Coldfield: March, 1899.

The larva of Asilus crabroniformis, L., destructive to that of Geotrupes.—In "Le Naturaliste" for March 1st, 1899, pp. 55-6, is an article on this subject by Capt. Xamheu (well known for his researches on Coleopterous larvæ), from which we give the following freely translated extracts.—Eds.

"On a 5th April at Port Vendres (Pyénées Orientales), in a place where sheep's dung was amassed, I found in their cocoons eight larvæ of *Geotrupes hypocrita*. Transported to my study and placed under favourable circumstances, after two days they repaired the damage to their protecting envelopes caused on the way. On the following 6th of May I examined the contents of the cocoons, and one of them was tenanted by the long and large fleshy white larva of a Dipteron: on the 15th of the same month, a little before the usual time for the beetle larva to assume the pupa state, the Dipterous larva left the cocoon and disappeared in the earth to the depth of 20 centimètres, after having made numerous long and winding passages, and at the bottom of the gallery it formed a long slender cellule, with smooth walls, in which it transformed to a pupa on the 23rd of July. The pupal condition lasted until the 26th of August, when the adult insect appeared. I had previously obtained a perfect insect from a pupa found in the earth in a plantation of olives where *Oryctes grypus* abounded. According to authors the larvæ of *Asilus* live on roots and on dead wood buried in the earth; but it is precisely such substances that furnish food for the larvæ of *Lamellicornis*, and it results that probably from this cause the former observations on the larvæ of *Asilus* were superficial. In any case the larva of *Asilus crabroniformis* lives to the detriment of those of *Lamellicornis* of the genus *Geotrupes*."

Helicopsyche bred in New Zealand.—Among some insects recently received from Mr. G. V. Hudson, F.E.S., of Wellington, N. Z., are several examples of a small Trichopteron indicated as having been bred from *Helicopsyche* cases in December, 1898. They are little unicolorous densely pubescent black insects, larger than the European species. It will be necessary to make a minute examination of denuded specimens, but so far as I can see at present they appear to be closely allied in structure to those forms that have been bred elsewhere, and may not require generic separation: the cases did not accompany them. Whether there be more than one

species in New Zealand remains to be proved. I formerly saw what appeared to be three kinds of cases from the colony. But the differences might be owing to degrees of maturity on the one hand, and to variations in the building materials at the disposal of the larvæ on the other. This note is preliminary.—R. McLACHLAN, Lewisham, London: April 8th, 1899.

Cardiastethus fasciventris, Garb., in Suffolk.—In Raydon Great Wood, near Hadleigh, on the 16th inst., while beating fir trees for *Pimplæ* and *Pezomachi* (which did not occur), I found a couple of specimens of the above in my umbrella. At Hayland, near Sudbury, I swept a single example last May (1898), but it certainly was not from *Conifera*, of which we approached none. These records are interesting, since Mr. Saunders (Hem.-Het. Brit. Is.) apparently knew of no locality for it north of the Thames in 1892, and it does not occur in the Ipswich District, which is only 2½ miles from the former locality.—CLAUDE MORLEY, The Crescent, Ipswich: April, 1899.

Pinus germanus, F., in Suffolk.—On the 16th inst., whilst sheltering from a shower at Little Wenham, I discovered a strong colony of this rarity in a gate post that was so old as to be quite unassignable to any particular species of tree; there was no bark left, and the surface was quite green. I saw some two dozen perfect beetles, but did not thoroughly investigate the post, which would probably have meant death to the majority of the very numerous larvæ feeding in it. The post was full of their borings, and when about to become pupæ they approach very near the surface and gnaw out an oval chamber, in which they probably effect the final change during mid-winter, since Mr. G. Douglas Turner has sent me specimens from Bramber in February (1894). They are, however, quite mature, and immediately begin walking about as though the muscular action had been quite an every day affair; and of those I took two pairs were *in cop.* upon arriving home the same evening. The species has never been taken in this district before, and is only recorded from Bungay, in Suffolk, where it was taken by Curtis (v. Brit. Ent.), and by Mr. W. Garneys (v. The Naturalist, 1858), quoted by Stephens and Fowler.—ID.

Corticæ (Hypophlæus) linearis, Fabr., at Woking.—Since the publication of Mr. Heasler's note on the capture of this interesting little Tenebrionid at Oxshott (Ent. Record, x, p. 176), I have been on the look out for it in this neighbourhood, but without success till a few days ago, when I found four specimens under the bark of a fallen pine. In the same tree there were dead or living specimens of *Myelophilus piniperda*, *Tomicus laticis*, *Hylastes palliatus*, *Rhizophagus depressus* (plenty), *R. bipustulatus*, *Lamophlæus ferrugineus*, *Phlæopora reptans*, &c., but no trace of *Pityogenes bidens*, upon which *C. linearis* is said to be parasitic. The tree, however, had long since been attacked by the *Scolytidæ*, and the top was gone, so that last year it may have contained specimens of the *Pityogenes* in the smaller branches.—G. C. CHAMPION, Horsell, Woking: April 3rd, 1899.

Salpingus mutilatus, Beck, at Gomshall.—I captured two mature male examples of this species on the downs at Gomshall on the 1st instant. They were found under the bark of beech, in company with *Rhinosisimus planirostris* and *R.*

rusticollis. The specimen taken by myself in the same locality in 1872, as well as others found at Caterham in 1873 and 1874, were all more or less immature. *S. mutilatus* is so like *R. planirostris* in general facies that it might easily be passed over for that common insect in the field. Mr. J. J. Walker captured a specimen of *S. mutilatus* at Mickleham in 1897.—ID.

Coleopterous notes from Surrey.—A visit to Wimbledon Common in January produced a specimen of *Choleva spadicea*, Sturm, and on February 12th I obtained a single example of that beautiful insect, *Megacronus inclinans*, Grav., also *Stenus bimaculatus*, Gyll., *Myllæna brevicornis*, Matth., *Megarthus sinuato-collis*, Luc., &c. and a few days later *Stenus lustrator*, Er., *Homalota laticollis*, Steph., with *Chaetocnema subcærulea*, Knts., in plenty, all out of moss and dry grass tufts.

On February 22nd, I cycled to Esher to work the moss at the Black Pond, where I secured three specimens of *Gymnusa brevicollis*, Payk., and found *Stenus palliatus*, Steph., with its var. *nivens*, Fauv., fairly common; a single example of *Mycetoporus clavicornis*, Steph., and a few *Myllæna intermedia*, Er., also turned up. The most abundant insect, however, was *Tachyporus transversalis*, Grav., which occurred literally by scores, being quite as abundant in this instance as its commoner brethren, *T. chrysomelinus* and *T. hypnorum*; as in 1898, *Actobius cinerascens*, Grav., was plentiful.

Out of the moss I shook several hibernating specimens of *Donacia sericea*, L., and one *Anatis ocellata*, L. The weather during March has not been favourable to out door work, but during two short visits to Wimbledon I have picked up a few nice things, the best being the typical form of *Acupalpus exiguus*, Dej., which I have long looked for; they were very local, in a damp spot at the roots of grass, but not uncommon, as I secured a dozen specimens in about half an hour; the var. *luridus* occurred with it, about equally common. During these two visits other insects taken were, *Lathrobium longulum*, Grav., *Stenus lustrator* again, *Homalota angustula*, Gyll., *Quedius fuliginosus*, Grav., *Bembidium Mannerheimi*, Sahlb., *Bythinus bulbifer*, Reiche, &c.—T. HUDSON BEARE, King's Road, Richmond: March 28th, 1899.

Quedii, &c., near Plymouth.—A severe storm in January last having wrecked several decaying trees in Beaumont Park, Plymouth, I availed myself of the opportunity to search for *Coleoptera* therein, and had the satisfaction of obtaining a specimen of *Quedius ventralis* from fungoid pulpy wood of an elm. The insect had, at first sight, the appearance of being dead and mouldy, but it quickly became active and cleaned itself, except as to its tarsi, which were attacked by a growth of club-shaped whitish fungus, and outstanding bundles of these processes still remain.* I have taken *Anchomeni*, similarly affected, on Dartmoor, except that in their case the fungus was blackish. Fragments of *Q. ventralis* occurred in another tree, a beech, as well as a couple of larvæ which may be referable to the same species, and which I am trying to rear. Three specimens of *Pristonychus terricola* were ensconced in a deep fracture in the timber of the same tree. A remarkable situation for them, for, when the tree was standing the day before, they would be some twelve feet above the ground. They are small specimens too, being only 12—13 mm. in length.

* A fungoid growth is frequently to be found upon specimens of this species captured in early spring.—G. C. C.

Another interesting capture is that of *Pentarthrum Huttoni*, once more in the living tree at Plymouth, after an interval of ten years without meeting with it (*vide* Ent. Mo. Mag., 1889, p. 326), this time feeding in a horse chestnut. Elsewhere, at Efford, Plymouth, I have found *Rhopalomesites Tardii* in an old elm stump. It seems mostly attached to ash in this district, and in the particular locality under notice all the ash trees I have been able to find have been almost cleaned out by it, remains of the dead beetles being there in quantity to tell the tale, whilst living specimens are very scarce, there being so little of the wood remaining.

Referring again to the genus *Quedius*, I have found *Q. auricomus* generally distributed, but by no means common, in the Dartmoor streams. Of *Q. umbrinus* a couple occurred in moss on a boulder in a rivulet near Hill Bridge, Dartmoor; and of *Q. attenuatus* I secured two in sphagnum near Prince Town. For confirmatory identification of the two latter insects I am indebted to Mr. Newbery. In July, 1896, in hedge clippings by the road-side, in a lane leading to Ugborough Beacon, I took a single immature example of *Q. longicornis*, kindly identified for me by Mr. Champion.—JAMES H. KEYS, 1, Sea View Avenue, Lipson, Plymouth: *March 20th*, 1899.

Further Coleopterous notes from Iwade, Kent.—The marshes at Iwade were again extensively flooded during the winter just past, the water remaining on them for several weeks, and seriously interfering with communication by road with the Isle of Sheppey. As before, a good quantity of flood rubbish was left behind by the water, and the results of two visits at Easter, of a few hours each, to the marshes in search of *Coleoptera* are, I think, interesting as compared with those obtained by Mr. A. J. Chitty and myself last spring (*ante*, pp. 57 *et seq.*). The rubbish was in practically the same condition as on that occasion, or perhaps a little drier, and beetles were again very numerous; but the effects of the thorough drenching of the marshes with salt water was evident, not only in the complete destruction of the reeds and other aquatic plants in the marsh ditches, but also in the rarity or absence of many species of beetles which affect fresh water situations, and were plentiful enough last spring. Thus, such species as *Acupalpus consputus*, *Pacilus cupreus* and *versicolor*, *Pterostichus anthracinus*, *gracilis* and *inæqualis*, *Anisodactylus binotatus*, *Stomis*, various *Anchomeni*, *Cnemidotus impressus*, *Philonthus fumarius*, *Cryptobium*, &c., &c., did not put in an appearance at all, or were met with only by single specimens. On the other hand, *Polystichus vittatus*, hitherto so rarely found here, might now have been called almost abundant, occurring as it frequently did in little companies of three or four, in moist bare spots under the rubbish, and less often in the stuff itself. Another feature of the collecting was the abundance of the *Histerida*: *Hister neglectus*, in particular, turning up in dozens, with *H. 4-maculatus* (not rare, and very variable in marking), *bissexstriatus* and *12-striatus*, *Carcinops minima*, and *Onthophilus striatus*. *Amara strenua* again occurred, but only three or four specimens were found, with a few of the little *Harpalus puncticollis*, Payk. (*parallelus*, Brit. Cat.). *Achenium humile* was nearly, if not quite, as abundant as it was last year, and *Myrmedonia limbata* was rather more so; while *Trogophloeus foveolatus*, Sahlb., not previously observed at Iwade, occurred in almost every handful of the rubbish, with occasional dark examples of *Homalota angustula*, Gyll.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: *April 8th*, 1899.

Reviews.

NEW YORK STATE MUSEUM: 13th and 14th REPORTS OF THE STATE ENTOMOLOGIST. Albany, N. Y. 1898.

A melancholy interest attaches to the first of these Reports, inasmuch as it is the last of a long series by the pen of the late Dr. J. A. Lintner. It is thinner than usual, but put together in the same manner as its predecessors, and full of interesting matter on a variety of subjects, the chief of which are *Tenthredo rufopectus*, *Urocercus albicornis*, *Eacles imperialis*, and *Lygus pratensis*. The author regards *Urocercus* (*Sirex*) as comparatively harmless in the States, and says that usually it only attacks diseased and dying trees, which we venture to think is by no means the case in Europe. After Dr. Lintner's death there were several names mentioned in connection with his successor.

The introductory remarks to the 14th Report are signed by Dr. E. P. Felt as Acting State Entomologist: he had been Dr. Lintner's assistant, and part of some preceding Reports had been contributed by him.

With this 14th Report a different form is commenced, probably with the idea of giving space for larger plates. It occurs to us that the illustrations in the text are better than in some former annual Vols., and there are numerous plates, those giving the aspect (from photographs) of forest trees defoliated by caterpillars being specially interesting and instructive, and they are artistic samples of "half tone" process work. Although the form is changed the plan remains the same, and we congratulate Dr. Felt on having made a good start. The important item of bibliography is on even a more extended scale than formerly. The defoliating "tent" caterpillars take a prominent position. Amongst other and varied subjects a chapter is devoted to the heat-loving *Lepisma domestica* (*Thermobia furnorum*), which caused a good deal of attention in this country a few years ago, assuming that the Old and New World forms are identical, about which there seems little doubt.

FLORIDA AGRICULTURAL EXPERIMENT STATION. Bulletins 48 and 49. Deland, Fla. E. O. Painter and Co. 1898.

We have pleasure in noticing these two Bulletins. The first by P. H. Rolfs concerns Diseases of the Tomato, mostly caused by fungi, the principal insect enemy being *Heliothis armigera* (the "boll worm"): the second, by A. L. Quaintance, is on Insect enemies of the Tobacco, which are mainly Lepidopterous, and of which the most important are two species of *Sphinx* moths, and a leaf-mining *Gelechia*. These Bulletins are sent free to any address in the State of Florida upon application to the Director of the Station.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: February 20th, 1899.—Mr. P. W. ABBOTT, Vice-President, in the Chair.

Mr. R. C. Bradley showed some rare *Phycidae* and *Galleriidae*, &c., presented to the type collection by Dr. P. B. Mason. Mr. F. T. Fountain, *Sphinx ligustri* from Salford Priors. He said that he found larvæ in 1897 on privet, but on searching in the same place in 1898 he could only find two on privet, but found a number on

ash. Mr. A. H. Martineau said that he had found them on a spineless holly at Solihull, and reared them on it. Mr. P. W. Abbott, *Apamea unanimitis*, a series from Wicken Fen, one being a very dark one. Mr. Fountain, *Hibernia progemma* var. *fuscantaria* and *H. rupicaprararia*, freshly taken at Small Heath. Mr. Martineau, photographs of butterflies in the "Krömsköp."

March 20th, 1899.—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. P. W. Abbott showed *Epinephele hyperanthus*, under-sides, from Carlisle, three being var. *Arete*, and three being very pale, with spots of the usual size; also typical specimens for comparison. Mr. Bethune-Baker, a lot of *Lycanidæ*, including a long series of *Icarus* from many localities, with blue forms of the females from N. Wales, and others from Brusa, Asia Minor, in which the females showed a shade of blue; also nice forms of *Corydon* from Spain, &c. Mr. R. C. Bradley, *Paraponyx nymphæata* and *stagnata* from various localities, including two white *stagnata*, small in size, with the markings very faint, locality unknown. Mr. G. H. Kenrick read a paper upon "Some Phases of Variation among the *Lepidoptera*." He divided varieties into seven different kinds: (1) permanent variation of different broods = Seasonal Dimorphism; (2) permanent local forms not occurring with the type, such as *Lycana Salmacis*; (3) permanent variations occurring with the type, such as *Argynnis Valezina*; (4) species which occur in two or more well marked forms, sometimes connected with intermediates, sometimes not, such as *Apamea oclea*, *Miana strigilis*, &c.; (5) occasional persistent varieties, such as yellow *Zyganids*, *Arctiids*, &c.; (6) food plant forms, of which *Teniocampa gracilis* apparently presents an example, but of which undoubted examples are very rare; (7) the rare erratic abnormality, usually unique. He exhibited four drawers of insects containing good examples of each class, and discussed the cause of origin, &c., at some length.—COLBEAN J. WAINWRIGHT, Hon. Sec.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
February 23rd, 1899.—Mr. A. HARRISON, F.L.S., President, in the Chair.

Rev. F. H. Wood, of Bromley Park, Kent, was elected a Member.

Mr. Sauzé exhibited a specimen of the Heteropteron, *Acanthosoma hamorrhoidale*, taken alive a few hours before in Brixton. Mr. Harrison, a long series of *Parnassius Apollo*, both bred and captured, arranged to show the variation in the large central ocellus on the hind-wings, also a series of *Papilio Podalirius* and *P. Machaon*, both species from Meiringen. Mr. Clarke, specimens of the freshwater shrimp, *Gammarus fluvialilis*. Mr. West, of Greenwich, a long series of the four species of the Homopterous genus *Philanus*, including some hundred different varieties of the common garden spit-fly, *P. spumarius*. Mr. Moore, a preserved larva of *Papilio Cresphontes* of North America. Mr. Step then gave a series of notes and observations he had made during the last few years on our larger British Crustaceans, and he illustrated his remarks by admirable lantern slides from his own photographs.

March 9th, 1899.—Mr. R. ADKIN, F.E.S., Vice-President, in the Chair.

Mr. Main, two specimens of the sea-spider, *Pycnogonum littorale*, taken crawling on wooden piles in the Medway at Port Victoria. Mr. Adkin, males, imagines, and cases of *Psyche villosella*, and also a case of *P. opacella*. Mr.

Edwards, cases and females of *Psyche villosella*, *P. opacella* and *P. graminella*. Mr. Tutt communicated an interesting paper on, "The Nature of Metamorphosis."—HY. J. TURNER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *March 15th*, 1899.—MR. G. H. VERRALL, President, in the Chair.

Mr. William Martin Geldart, M.A., of 15, Park Road, Norbiton; and Mr. Hugh Main, B.Sc., of 45, The Village, Old Charlton, Kent; were elected Fellows of the Society.

Mr. J. J. Walker exhibited several specimens of *Longitarsus rutilus*, Ill., a rare British species of *Halticidae*, taken by him on March 11th at Halstow in Kent. Mr. Tutt, a very fine series of *Epunda lutulenta* captured by the Rev. C. R. N. Burrows last autumn near Mucking in Essex. This series, while agreeing in the main with Borkhausen's typical form, varied *inter se* in such a manner as to give almost parallel forms to those so well known from Scotland and Ireland, yet they had the ordinary blackish-fuscous ground colour, and not the intense black ground colour peculiar to the latter. Mr. Merrifield, some *Lepidoptera* collected in the latter half of May and the first week of June near Axolo (Venetia), Riva, and Bozen. They included some very fine specimens of *Syrichthus carthami*, a very large *Syntomis phegea*, and examples of *Pararge Aegeria* intermediate in colour between the Northern and Southern European forms. Mr. G. T. Porritt, a series of extreme forms of *Arctia lubricipeda*, var. *fasciata*, and also some examples of what appeared to be a new form of the species, of which he had bred a few during each of the past two seasons. Mr. O. E. Janson, an inflorescence of *Arauja albens*, Don., together with a butterfly which had been entrapped by getting its proboscis jammed in the slit between the anther-wings of one of the flowers. It was found by Mr. C. J. Pool at Monte Video. Mr. Gahan, having since examined the beetle from Peru shown by Mr. Jacoby at the previous meeting, he was now able to say definitely that it was a Longicorn, and represented a new genus to be placed in the group Acanthocinides of the family *Lamiidae*. He exhibited this beetle along with a species of *Diabrotica* and a species of *Lema* from Peru, in order to show the remarkably close resemblance in coloration between the three species.

April 5th, 1899.—The President in the Chair.

Dr. Frederick George Dawtrey-Drewitt, M.A., M.D., F.R.C.P., F.Z.S., of 2, Manchester Square, W.; Mr. William E. Ryles, B.A., of 11, Waverley Mount, Nottingham; and Mr. Albert Wade, of 1, Latham Street, Preston; were elected Fellows of the Society.

Mr. Blandford exhibited insects of different orders collected by Dr. Albert L. Bennett in West Africa, and read some notes by Dr. Bennett on the habits of the Goliath beetles. In reply to the remarks which followed, Dr. Bennett stated that the male beetles use their cephalic horns in fighting with one another, as well as for puncturing the bark of vines in order to bring about a flow of the sap, upon which they feed. The Rev. Canon Fowler, a photograph of a large bee's nest found in an open hedge near Wragby in Lincolnshire. Mr. McLachlan, young larvæ of a "Locust," received from Mr. E. A. Floyer, Director-General of Telegraphy in Egypt, and said by him to have caused the *Calotropis* trees in Nubia to be in a moribund condition. The larvæ were identified by Mr. Burr as those of a species of *Pacilocerus*, probably *P. vittatus*, Klug. Mr. Burr, a specimen of *Acridium*

egyptium which was found at Maidenhead; also a remarkable clay model of a Locustid with a Chinese inscription underneath, and requested information as to the origin of such models. Mr. Blandford gave an account of a paper by Dr. A. Ribaga, published in the "Rivista di Patologia Vegetale," v, p. 343, on an asymmetrical structure occurring in the adult female of the common bed-bug, and apparently hitherto overlooked, although it communicated with the exterior by a conspicuous notch in the fourth abdominal segment, midway between the median line and the lateral margin. This structure consisted of a large quasi-glandular mass of unknown nature in which was encapsuled an organ consisting of fibres, the free ends of which terminated in minute chitinous spines in a recess lying under the fourth abdominal segment. The adjacent margin of the fifth segment was thickened and set with strong teeth. The non-glandular part of this singular structure was conjectured by its discoverer to be a stridulating organ; but no evidence of stridulation had been obtained. It was certainly far more complex than most, if not all, stridulating organs known to exist in insects. Mr. G. J. Arrow communicated "Notes on the Rutelid genera *Anomala*, *Mimela*, *Popillia*, and *Strigoderma*."—J. J. WALKER and C. J. GAHAN, *Hon. Secretaries*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *March 13th*, 1899.
—Mr. S. J. CAPPER, F.L.S., F.E.S., President, in the Chair.

The President reviewed the first volume of Mr. Tutt's new work on the British *Lepidoptera*, and recommended it to all students of that Order. Mr. Burgess-Sopp, of Hoylake, then read his paper on "Our Cockroaches." Beginning with the most ancient known form, *Palaeoblattina Douvillei*, found in the Caradoc beds of Calvados in France, he traced the history of the order as shown by fossil remains through the Carboniferous, Mesozoic, and Cainozoic periods down to the present. The *Blattodea* were most numerous in the Carboniferous period, which he designated the "Age of Cockroaches." Since then the number of species has gradually dwindled away. Throughout this vast period the change undergone in their structure has been very small indeed. He enumerated ten species now found in Britain: three of these being indigenous, four introduced, and three occurring as occasional visitants from abroad. He then gave an account of the life history of *Blatta orientalis*. Other exhibits were: a delicate green cockroach by Mr. F. N. Pierce; remarkable varieties of *Campogramma bilineata* by the President; British *Carabida*, including the rare *Carabus auratus*, *nitens*, and *clathratus* by Dr. J. W. Ellis; *Lepidoptera* by Mr. H. B. Prince; and *Rhagium bifasciatum*, taken in February, by Mr. F. Birch.

April 10th.—The Rev. R. FREEMAN, M.A., in the Chair.

Mr. F. N. Pierce read some interesting notes from Mr. Louis B. Prout on the much disputed species of the genus *Oporabia*, and showed many specimens of the forms *dilutata*, *autumnaria*, and *filigrammaria*. Other exhibits were:—Of *Lepidoptera*, specimens from the Delamere, Eastham, and Knowsley districts by Mr. F. C. Thompson, Mr. H. B. Prince, and the Rev. R. Freeman respectively; local forms and interesting varieties being well represented. Of *Orthoptera*, *Blabera gigantea*, taken in the Liverpool Docks, and *Panasthia juvenica* received from abroad, by Mr. E. J. Burgess-Sopp. Of *Coleoptera*, Mr. R. Wilding exhibited his collection of *Bembidia*, which is a model of neatness and order, and contains many local, rare, and otherwise interesting species. *Carabus glabratus* from Sty Head Pass, Cumberland, was shown by Mr. F. Birch. It was resolved that the meetings be adjourned till October 9th, on which date the chief exhibitional meeting of the year will be held.
—FREDK. BIRCH, *Hon. Secretary*.

PASTOR KONOW'S PROPOSALS AS TO THE CLASSIFICATION OF
HYMENOPTERA.

BY THE REV. F. D. MORICE, M.A., F.E.S.

Pastor F. W. Konow, the well known Hymenopterist and authority on the *Tenthredinidæ*, &c., has recently published suggestions for an improved division of the *Hymenoptera* into Sub-Orders. A brief summary of his views may be of interest to English Hymenopterists. They may be found stated at length, with remarks as to divisions employed in other Orders and the desirability of a more uniform system of nomenclature in these matters, in the "Entomologische Nachrichten," Berlin, 1897, p. 148.

The present paper has been read by Herr Konow, and he has sanctioned its publication as a compendious statement of his views.

Linné's twofold division of the *Hymenoptera* into "Genera *Terebrantia*" and "Genera *Aculeata*" is open to the objection that it rests solely upon ♀ characters. Nor have the *Tenthredinidæ*, &c., strictly speaking a "terebra" (*borer*), but a "serra" (*saw*), while again the exsertile ovipositor of the *Chrysidæ* (*Tubulifera*) is not properly an "aculeus" (*sting*), nor is it known to be ever used either as a saw or as a borer.

The division into "*Ditrocha*" and "*Monotrocha*" is so far better that it rests on a character—the double- or single-jointed trochanter—which appears in both sexes. Taschenberg has, indeed, asserted that the sub-Order *Ditrocha* includes insects with single-jointed trochanters; but he gives no instances, and though *Helorus* has been considered a case in point, Konow finds that it has in fact a double trochanter. Again, some *Monotrocha* (*Oxybelus*, *Gorytes*, &c.) show an apparent division of the trochanter, but this (*teste* Konow) is an illusion, the supposed extra joint being really a part of the femur, and in no case moveable. Still, a division cannot be thought satisfactory which, on the strength of one common character, unites genera like the *Tenthredinidæ* and the *Ichneumonidæ*, differing as they do in all other respects quite as much from each other as from the *Monotrocha*.

In short, this twofold grouping, whether ovipositor or trochanter be taken as its ground, quite fails to separate the insects as Nature has separated them, and gives to the so-called sub-Order of *Terebrantia* or *Ditrocha* a seeming unity which it does not in fact possess.

Equally unsatisfactory for the same reason is the division, based on the connection of abdomen and thorax, between the *Sessiliventres*

[ENT. MO. MAG., 1899, Pl. I.



SCOPARIA DUBITALIS, HB.

(*Tenthredinidæ*, *Siricidæ*, and *Lydidæ*) and the *Petioliventres*, embracing all other families. Here, again, one of the sub-Orders only (the *Sessiliventre*s) has any real unity in itself, the other is an unnatural congeries of families differing completely both in structure and in habits.

A still less felicitous attempt is that to found a division on the food of the larva, and make, as Mr. Cameron has done, a group of *Phytophagous Hymenoptera*. Not only is this division founded on one stage—and that not the final one—in the development of the insect; but its author finds himself obliged to upset his own system by admitting to his group of *Phytophaga* species which he owns to be not phytophagous. Indeed, if the aliment of the larva is to be the ground of division, it is hard to see how the *Apidæ* themselves can be denied a place among *Phytophaga*! Yet no one surely could propose to remove these from their place among the *Vespidæ*, *Sphægidæ*, &c., in order to associate them with the *Tenthredinidæ*. This system does not even give us, as the others do, a single homogeneous group. Both *Phytophaga* and *Non-phytophaga* (?) will have to embrace phytophagous and non-phytophagous families, and the associations of these families resulting from the proposed division will be in the highest degree unnatural.

The system of classification suggested by Konow differs from all the above in being not dichotomous, but threefold; and to the objection that a dichotomous division is in itself to be preferred, he would probably answer that Nature, at any rate, does not seem to prefer it. She, if he rightly interprets her system,* has divided the *Hymenoptera* into *three*, and not *two*, sub-Orders—no one of which can be regarded as more primitive than, or transitional to, either of the others. Each sub-Order differs from *each* of the other two in *one* of the characters on which the division rests, while from *both* of them taken together it differs in *two* of these characters, and agrees with them in *one* (see his Scheme, *infra*).

The characters in question have long been used by systematists, but Konow deals with them somewhat differently, and is led accordingly to different results. They are, (1) the single or double trochanter, (2) the junction of thorax and abdomen, sessile or petioled, (3) the alar neuration, three cubital cellules or four *originally* present.

* In Deutsch. Ent. Zeit., 1890, p. 228, Herr Konow criticises all attempts to range the phenomena of life in "linear series," and propounds a view that the "circle" or rather the less rigid "ellipse" forms the true boundary of all natural groups. In this fact he sees an analogy to the Copernican "Welt system," which, to the more prosaic English mind might seem a little fanciful. But the theory does not depend upon the analogy, and may be maintained apart from it.

On this last point Konow goes beyond, or rather behind, previous interpretations of the observed phenomena, and enquires not only what nervures actually occur in a particular wing, but, to what original or ideal type of neuration these nervures point. His view is that the obliteration (or doubling) of an original nervure may cause a family or genus to deviate from its original type, so as to deceive an uninitiated observer, but that science can recover that type by processes of comparison and inference—noting, *e. g.*, not merely the number of the existing nervures, but their position, and also taking count of the rudiment-like vestiges of lost nervures, and their exceptional re-appearance in abnormal specimens. (Thus he has repeatedly seen specimens of *Dolerus* with *four* cubital cellules, and recognises in these a reversion to the original type from which he believes the neuration of normal *Dolerus* to have deviated. He tells me also in a letter that Mr. Cameron's *Taxonus glottianus* is really a similar abnormal specimen of *Emphytus tener*, Fall., with *four* complete cubital cells instead of the usual *three*). Again, the wings of most *Chalcidæ* and *Chrysidæ* are alike almost nervureless. Yet certain of their genera (*Leucospis* and *Smicra* among the *Chalcidæ*, *Stilbura* and some exotic forms of *Chrysis* in the other family) have retained enough of the original neuration to indicate its general type; and to show that the *Chalcidæ*, like the *Ichneumonidæ*, had once three cubital cellules, and the *Chrysidæ*, like the *Vespidæ*, had *four*. By similar arguments, he maintains that *Aulacus* and *Trigonalyx* form a special group among the *Ichneumonidæ*, making transition to the *Braconidæ*, while *Evania*, *Brachygaster* and *Fenus* are true *Braconidæ*, and not—as Taschenberg proposed—to be grouped separately along with *Aulacus*.

For each of his three Sub-Orders Konow proposes a name formed from that of some one genus belonging to it, with the suffix—IDEA, viz.: I. VESPOIDEA; II. ICHNEUMONIDEA; and III. TENTHREDONIDEA.

As to the first of these, he remarks that he is inclined to see the true type of the Sub-Order, not in *Vespa*, but in *Philanthus*, but he acquiesces in the common usage which designates such insects popularly as “Wasps.”

As alternative names—denoting each the one character which belongs to the Sub-Order, and to that alone—he suggests: I. *Monotrocha*; II. *Tristega* (with three cellules); and III. *Chalastogastra* (with unconstricted abdomen).

Of these three Sub-Orders

- I. VESPOIDEA will embrace all the *Aculeata*, and also—contrary to the views hitherto general—the *Chrysidæ*.
- II. ICHNEUMONIDEA: the *Ichneumonidæ*, *Braconidæ*, *Cynipidæ*, *Chalcididæ*, *Proctotrupidæ*.
- III. TENTHREDONIDEA: the *Lydidæ*, *Siricidæ*, and *Tenthredinidæ*.

Scheme of the above Sub-Orders, with their characters :

	4 cubital cellules present originally (<i>Tetrastega</i>).	Only 3 cubital cellules present originally (<i>Tristega</i>).	
Trochanters 1-jointed (<i>Monotrocha</i>).	I. VESPOIDEA.		Thorax behind compressed to a point. Abdomen petioled. (<i>Clis- togastra</i>).
Trochanters 2-jointed (<i>Ditrocha</i>).		II. ICHNEUMONIDEA.	
	III. TENTHREDONIDEA.		Thorax behind not compressed to a point. Ab- domen sessile. (<i>Chalastogastra</i>).

As to further sub-division of the Order, Konow approves the decision of the German Zoological Society that Families should have names with the suffix—*idæ* ; but points out that it is still unsettled what groups are to be called Families. In his view this name should be given to the category immediately below that of Sub-Order, so that the generally accepted Families, *Apidæ*, *Vespidæ*, *Siricidæ*, *Braconidæ*, &c., would stand. But he shows that confusion exists in the present practice, e. g., Mr. Marshall uses names in “-*idæ*” for the “Tribes,” into which he separates his “Divisions” of the “*Braconides*.” There is a similar lack of uniformity in the systems of different Coleopterists, Lepidopterists, &c., and Konow’s plea for an agreement as to this point will probably be felt to be reasonable.

Below the Families with names in -*idæ* might come, he says, still following the rules of the German Zoological Society, Sub-Families with names (adjectival, *subaud.* “*species*”) in -*inæ*. Then for Tribes and Sub-Tribes would remain the names in -*ides*, -*ades*, and -*ini*. Konow is emphatic in contending that all names of *categories* should by rule be adjectives, and that masculine substantives should not be allowed to appear till the last steps in the process of sub-division are reached.

Brunswick, Woking :

November, 1898.

NOTES ON CERTAIN PALÆARCTIC SPECIES OF THE GENUS
HEMEROBIUS.

No. 2—*H. MARGINATUS*, *H. LUTESCENS*, *H. HUMULI*,
AND *H. OROTPUS*.

BY ROBERT McLACHLAN, F.R.S., &c.

The four species here considered have two general characters in common, viz., a yellow (or yellowish) longitudinal band on the thorax with dark sides, and a more or less conspicuous black (or blackish) spot on the anterior wings near the base, on a small transverse nervule placed at a point where the area between the lower branch of the upper cubitus, and the upper branch of the lower cubitus, is constricted. In form *H. orotypus* is much more elongate than the others. In general appearance the first three are the most alike, and the last (*orotypus*) the most dissimilar, whereas, in the structure of the ♂

appendages the first three differ very widely *inter se*, and the third (*humuli*) and fourth (*orotypus*) follow the same general plan.

Intense confusion exists in the synonymy and bibliography. I have not attempted to go through all the works, and do not think the nomenclature here adopted would be materially influenced by so doing. A re-examination of Stephens' collection has been made. This collection was re-arranged by a non-expert after it was placed in the British Museum, and in endeavouring to find, or fix, the types, I have relied upon the particular specimen the pin of which bears a MS. label in Stephens' hand (though possibly not so placed by him); occasionally this label is absent (*marginatus* is a case in point, but the description is sufficiently conclusive, combined with the printed label).

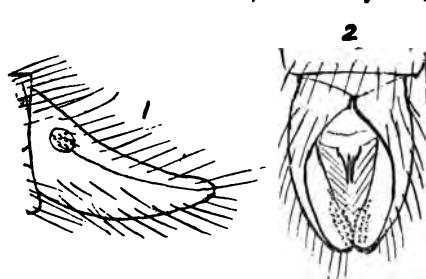
I take it to be impossible to confuse the *males* if the anal characters be attended to; the females of *lutescens* and *humuli* are more difficult.

It is very probable that all the four species here noticed are nearctic as well as palæarctic.

H. MARGINATUS, Steph. (1836), McLach., Wallengr., Rostock, Reuter, &c.

lutescens, Zett. (sec. Wallengr.).

Body almost wholly pale yellow, almost whitish in the dry insect; a narrow brown (or blackish-brown) line on either side of the thorax (scarcely apparent on the sides of the head above): antennæ yellow, not appreciably annulated: abdomen



often with faint darker dorso-lateral markings, usually becoming fuscous above in the dry insect; legs pale yellow, the tarsal joints faintly darker at the tips. Anterior-wings broad-oval, the costal area much broader at the base than in the allied species, consequent on the costal margin rising almost abruptly at that portion, the apex obsoletely

sub-acute, and the apical margin somewhat oblique, an appearance intensified by the nature of the markings; the sub-basal blackish point small and not prominent, frequently sub-obsolete; the most permanent markings consist in five or six elongate dark grey streaks (the first at the base) along the dorsal margin, separated by pale spaces, sometimes continued upward into the membrane; nervules in the costal area, and the other neuration, with blackish spaces, but not conspicuously; gradate nervules blackish, the lowest* in the inner series usually placed far towards the apex and midway to the outer series; the area between the lower cubitus and the dorsal

* In these descriptions no great importance should be attached to this gradate nervule (nor to others). I have only indicated the condition as exemplified on examination of a large number of specimens. The nervule closing the second post-costal cellule and others below it are not here reckoned as belonging to the inner gradate series.

margin is broader, and the cubital branches longer, than in the allied species. Posterior-wings without markings, save that the dorsal margin is sometimes faintly greyish towards the base, and the pterostigmatic region somewhat yellowish.

In the ♂ the appendages are simple, consisting of a pair of much elongated curved valves, obtuse at the apex, convex externally, and concave internally (or above), the opposing apices touching; internally, before the apex, towards the lower edge, are rows of minute blackish teeth.

Likely to be confounded with large examples of the next species by the colours, but with structural characters distinct from any other. Apparently wide-spread over Europe, but less common than the two succeeding species; the exact distribution and degrees of frequency must be worked out by local observation.

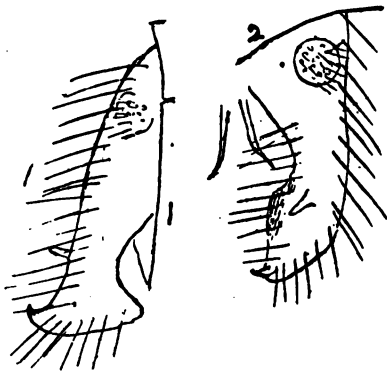
It probably occurs in N. America. A ♀ insect in my collection from Mt. Washington, New Hampshire, appears to agree in all respects, but it is necessary to see the ♂.

H. LUTESCENS, Fab. (1793), Steph., Hagen.

affinis and *paganus*, Steph.

humuli, Rostock, Reuter?.

Pale primrose-yellow; a blackish stripe on each side of the thorax much narrower than the pale band enclosed thereby, often visible on the sides of the head above; antennae yellowish, not appreciably annulated: abdomen usually remaining yellowish in the dry insect, and with a dorso-lateral row of dark spots on either side; sometimes changing to fuscous, especially in the ♀: legs pale, the tips of the tarsal joints faintly annulated. Anterior-wings broad oval, the apex obtuse, costal area narrow, not abruptly broader at the base; the sub-basal black point conspicuous (in the ♂ it is often the only very evident mark-



ing), and there is usually a series of brownish-grey clouds along the dorsal margin extending into the membrane, the blackish gradate nervules clouded with greyish; the neuration marked with short dark lines, but not conspicuously, and the points at the origin of the sectors of the radius are small; the lowest nervule in the inner gradate series as a rule placed more towards the apex than the one above it. Posterior-wings usually without appreciable markings.

In the ♂ the appendages are yellow, not furcate: viewed laterally they appear thick and elongate, dilated at base and apex, the upper edge nearly straight, the lower much excised before the greatly widened apex, which is almost truncate, the

upper angle with an inturned tooth, the lower obtuse; on the upper edge, towards the apex, there is a short, straight, acute horn or tooth directed upward, and having its origin on the inner face of the appendage.

Probably an abundant species all over Europe amongst deciduous trees (more rarely on Conifers), but never properly elucidated, inasmuch as the anal parts have never been described and figured. Rostock's tabular diagnoses of this (which he considered *humuli*) and the following (which he considered *orotypus*) are excellent so far as they go.

I have adopted the name given by Fabricius, because there is nothing in the description opposed to the identification, but, on the contrary, everything in favour of it. In the year 1866 Hagen sent me sketches of the appendages of several species of *Hemerobius*, and this was indicated as *lutescens*, yet in the same year, in his "Synopsis Synonymica," he referred *concinus*, Steph., to *lutescens*, an association impossible from the size alone, as he had probably discovered.

This species has been indicated in some recent British local lists as "*orotypus*," an error for which I am primarily responsible.

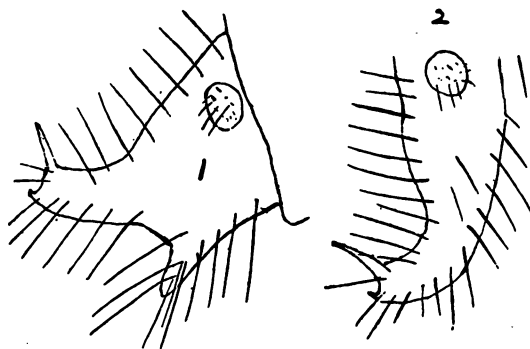
H. HUMULI, Linn., Schneider, Hagen, McLach., Wallengr.

obscurus, *nervosus*, *apicalis*, *crispus*, *nemorialis*, *obsoletus*, Steph.

lutescens, Ramb. (*sec. descript. append.*).

orotypus, Rostock.

Pale primrose-yellow; a broad blackish stripe on each side of the thorax (often seen on the sides of the head above), as broad as, or broader than, the pale band enclosed thereby: antennæ distinctly annulated with fuliginous, the apical portion



often decidedly darker: abdomen usually blackish in the dry insect: legs pale, somewhat dusky (from hairs), the tarsal joints vaguely annulated, the terminal joint usually wholly darker. Anterior wings broad-oval, with a greyer tinge than in the last species; the sub-basal black point usually very conspicuous, there

are smoky-grey spaces along the dorsal margin invading the membrane, and the gradate series of nervules are conspicuously clouded with smoky-grey, the black spaces on the neuration are apparently more numerous than in the last, and more punctiform, and the points at the origins of the sectors of the radius are much

more distinct; each black point on the neuriation forms the apex of a small sagittate pale grey marking; gradate nervules black, the lowest in the inner series often continuous with the one above it, or if placed nearer the apex it is only for a short distance (more rarely it is placed nearer the base). Posterior-wings having the costal and dorsal margins pale grey; the costal and gradate nervules, and often some of the marginal forks, conspicuously blackish.

In the ♂ the dusky yellowish appendages are very broad, the apex furcate, with a wide excision between the branches; the upper branch broad, its apex truncate and slightly excised, the lower angle acute, the upper produced into an out-turned spine (which is probably articulated, for it is sometimes turned inward); the lower branch much shorter than the upper, obtuse, slightly divergent.

This is apparently equally wide-spread as the last (and it also occurs in North America: I have specimens from the State of New York, and probably also from North Carolina). It and the preceding are almost universally confused in collections, and it is admittedly difficult to separate the females in some cases, but in considering a large mass of materials I think the characters given above are fairly constant; I have examined about 100 examples of each.

Linné's description suits this tolerably well, and the words "antennis fusco alboque annulatis" effectually, so it seems to me, exclude the preceding species (yet the Linnean "species" were often more collective than anything else). It was the *humuli* of Schneider (according to a type), and of Hagen according to a sketch of the appendages. It was, in the main, the *humuli* of my Monograph of 1868,* but the figure and description of the appendages there given are very indifferent (Rambur, in 1842, had already given an excellent description of the appendages under *Mucropalpus lutescens*). It was the *humuli* of Wallengren according to his letters and description of the appendages, but I think he did not fully understand the differences from the last species according to specimens received from him without names.

H. OBOTYPUS, Wallengr. (1871), Reuter?.

simulans, Walk., Neuropt. Brit. Mus., pt. ii, p. 285 (1853);

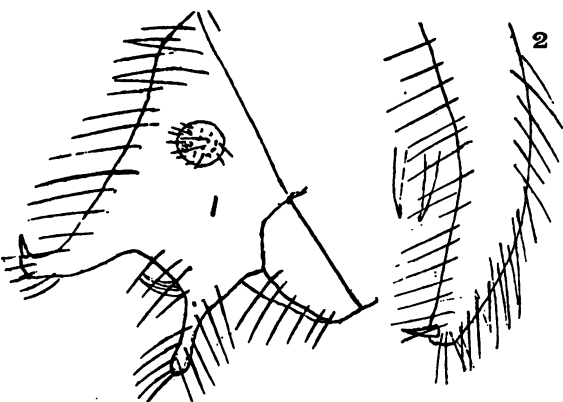
crispus, id., l. c., p. 288, nec Steph.

variegatus, var. *b*, Zett., sec. Wallengr.

Dusky or brownish-yellow, with the sides of the thorax broadly blackish-brown. Pronotum apparently shorter than in the three preceding species, transverse: antennæ greyish-yellow, with indistinct darker annulations: abdomen blackish above, and usually paler beneath, in the dry insect: legs dusky yellowish; the tarsi scarcely

* At p. 181 of my "Monograph" there is a remark to the effect that two species were probably intermingled, and the words concerning the appendages in many dry examples show that I had *lutescens* in view when writing them.

annulated, the terminal joint darker; coxæ, trochanters, and occasionally the posterior femora externally, brownish. Anterior wings long-oval, the apex sub-acute, costal area narrow; pale brownish-grey (varying to darker), with an irrorated appearance due to the longitudinal veins



being closely set with black points; the black sub-basal point very conspicuous, and there are distinct points at the origins of the sectors of the radius; the general colour is very uniform, but the dorsal and costal edges are darker, interrupted by pale spaces, and the gradate nervules have darker cloudings forming ill-defined fasciæ, these gradate series more oblique than in the preceding species, the lowest nervule in the inner series continuous with the one above it, or placed more towards the base (very rarely more towards the apex). Posterior wings uniformly pale greyish, the pterostigmatic region sometimes brownish.

Expanse of wings, 16—19 mm.

Appendages of the ♂ dingy yellowish or brownish, very broad, the apex furcate with a broad deep excision between the branches, which are slightly divergent: the upper branch stronger than the lower, curved upwards and inwards, ending in a strong claw-shaped inturned tooth, the apices of the opposed branches crossing if viewed from above, the upper edge with a strong fringe of pale hairs; lower branch slightly shorter, straight, finger-shaped, the apex obtuse and slightly dilated.

Separated from the species here associated with it (and from most others) by the elongate wings, which are more uniform in coloration. In its brownish general colour it approaches the species that will be considered in No. 3 of these Notes. Varies in intensity, but only slightly in its wing-markings. Allied to *humuli* in the appendages of the ♂, but I have seen only two ♂ of *humuli* (one from Finland, the other from Eastern Siberia) that could be confused with it from general appearance, and in these the form of the wings and the appendages left no doubt.

At present a little-known species. As European I have seen it only from Scandinavia (Wallengren's type* of *orotypus*), where it seems to be rare; Col de Mendé, Central Pyrenees (*Eaton*, June 24th); and from the British Isles. England (near Huddersfield, *Beaumont*, prior to 1864; Dunkery Hill, Exmoor, 1300 ft., September 20th, 1890,

* Wallengren's description of the appendages was probably drawn up from this type, in which the apical portion of the upper branch is accidentally bent under.

Eaton); Scotland (Aberdeenshire, September, 1878, *Eaton*; Strathglass, Fortingal, Inch and Killin, *King*; Clyde District and Rothiemurchus, *Morton*); Ireland (Athlone and Killarney, *King*). Probably attached to Conifers, but on this point more definite information is desirable.

I have a ♂ from Japan that appears specifically identical with British examples, and a ♀ from Eastern Siberia that probably also belongs here.

In the Introductory Remarks to No. 1 of these Notes it was hinted that there appear to be cases in which names bestowed upon nearctic specimens may have the right of priority. Here is an instance. I have not succeeded in finding characters whereby to separate the ♂ insect from Hudson Bay described by Walker as *simulans* (nor the ♂ from Nova Scotia placed by him as *crispus*). Being forced to come to a decision, I have resolved to adopt Wallengren's name for the present, and on these grounds:—many palæarctic and nearctic species are identical; many others are very closely allied but yet possess certain small differences: I can discover no differences in this case, but the nearctic materials are so few that I prefer to wait for the examination and comparison of further specimens.

EXPLANATION OF FIGURES.

H. marginatus—Fig. 1, appendage of ♂, from side; 2, same from above.

H. lutescens—Fig. 1, appendage of ♂, from side; 2, same from above.

H. humuli—Fig. 1, appendage of ♂, from side; 2, same from above, more enlarged.

H. orotypus—Fig. 1, appendage of ♂, from side; 2, same from above, more enlarged.

Lewisham, London: *April*, 1899.

NOTES ON BUTTERFLY COLLECTING IN THE ORMONT-DESSOUS VALLEY, SWITZERLAND.

BY A. HUGH JONES, F.E.S.

The pleasant recollection of a visit in the beginning of August in 1885 to Ormont-Dessous suggested a second experience last August.

There is perhaps no collecting ground in Switzerland better known than the road between Aigle and Le Sepey, a distance of about seven miles; and, as I was anxious to introduce my companion to Butterfly Life in Switzerland, I proposed a day's collecting up the valley, a suggestion in which he readily acquiesced.

On August 2nd, a brilliant morning, we left Aigle, and between that place and Le Sepey we noticed about 42 species of butterflies.

Several were in the greatest profusion, for instance, *Argynnis Paphia*, *Lycæna Damon* and *Corydon*; others were not quite so abundant, such as *Argynnis Aglaia*, *Adippe* (a fine form), and *Latonia* (the largest specimens in my cabinet were taken on this occasion), *Limenitis Sibylla* and *Pararge Achine*. The *Theclæ* were well represented by four species, viz., *T. spini*, *w-album*, *ilicis* and *quercus*. The first three were at certain spots abundant, flying over and resting on the blossom of the privet chiefly; that grand "Skipper," *Spilothyrus lavateræ* (by no means a common Swiss butterfly), was occasionally met with flying vigorously among the rocks which skirt the road side; such also were the localities for *Satyrus Hermione*, which was most abundant. *Callimorpha Hera*, that generally distributed species at low elevations, was not uncommon; and I took at rest on a scabious blossom a fine specimen of *Plusia bractea*.

On our reaching Le Sepey rain commenced, thus putting an end to a delightful morning's collecting. Six more miles brought us to Ormont-Dessous, where we stopped at the Hôtel des Diablerets (3815 ft.), and it was surprising to find at such a slight increase in elevation, and with such little apparent alteration in conditions, butterfly life so changed. Nearly all the species we had seen in the Sepey Road had disappeared, with the exception perhaps of a stray *Colias Edusa*; they were, however, replaced by others, not so numerous in species, but almost as abundant in individuals. *Argynnis Niobe* and var. *Eris*, *Ino* and *Amathusia* were now the principal butterflies, and were found commonly in all the surrounding meadows.

The valley appears to be rich in *Argynnidæ*, for I noticed nine out of the fourteen species occurring in Switzerland, but the conditions do not appear to be favourable for the *Erebiæ*, of which I only noticed six species:—*E. Melampus* (a large form), *E. Pharte*, *E. Manto*, *E. Pronœ* var. *Pitho*, *E. æthiops* and *E. Ligea*, and most of these sparingly. The *Lycænidæ* were also scarce, but this was probably owing to the comparative low elevation. By August most of the species would long since have disappeared.

There are various entomological excursions to be made from the Diablerets. By the route through the meadows to La Palette is good and affords abundant collecting almost to the summit, but *Erebiæ* are conspicuous by their absence. *Colias Phicomone* was rather common. I here took a wasted specimen of *Anthocharis Belia* var. *simplonia*. Several *Papilio Machaon* were to be seen careering over the summit (7133 ft.). Another excursion to Gsteig by way of the Col de Pillon is good, especially on the Gsteig side of the Col, about a mile down the

road. Here in some grassy hollows among firs *Erebia Melampus* and *Pharte* were rather common, the only locality in which I met with *Erebia* in any numbers.

Of all the excursions perhaps the one to Villars by way of the Col de la Croix, about eight hours there and back, is the pleasantest. From the top of the Col (5687 ft.) the path leads through fir woods and meadows, with good collecting all the way, to Villars. Although Villars is about 350 feet higher than the Diablerets, the climate seemed to be warmer. The view from the terrace of the hotel over the Rhone Valley and the mountains beyond, on the brilliant day it was our good fortune to be there, was one to remember.

On August 9th we started early for an excursion to La Chamossaire (6949 ft.) by the Col de la Croix. Leaving the Villars path to the left, we walked for many hours, without apparently either reducing the distance or increasing the elevation. Little did we see in the insect way on the route, which was somewhat bare and exposed, until reaching Bretaye. Here we found some sheltered nooks, and *Erebia Manto* was not uncommon, although getting worn. After visiting the summit—from which there is a fine view—we returned to Diablerets by way of Vers l'Eglise. Missing the path, which is badly defined, we were nearly benighted in a fir wood which clothed the mountain side, and after numerous ascents and descents reached the open country just before darkness set in. To add to our troubles a deluge of rain was coming down all the time, and we arrived at the hotel in a sorry plight.

On August 12th we bid farewell to Ormont-Dessous and the delightful entomological companions we there met, and one more day's collecting along the Sepey Road ended our visit.

Shrublands, Eltham :

April 24th, 1899.

NOTES ON CERTAIN MOTHS FOUND AROUND JERUSALEM IN 1896.

BY A. H. SWINTON, F.E.S.

I was informed that a German living at Jerusalem was in the habit of capturing moths at sugar, with what success I know not; those that I saw there flew by day in the vineyards, gardens, fields or moorland, were disturbed from their diurnal repose, or attracted to the lights on the supper table: indeed, in a district where the vines and scattered garden trees present little harbour, and the summer

twilight is short, the inducement to issue forth at nightfall in their pursuit, equipped as a highwayman, is not great.

I obtained specimens of the following:—

SPHINGINA.

Ino tenuicornis, 14/5—2/6.—Sunning sluggishly like the rest of the genus on the heads of thistles and other flowers growing in waste places.

Ino ampelophaga, "The Vine Consumer," 23/6 and 23/8.—During August this little black moth emerged in numbers from the cobwebby corners of the vineyards.

Deilephila livornica.—On the sandhills at Jaffa, which resemble the well known hunting grounds at Deal as regards fauna and landscape this moth was common in April, darting from the stunted vine stocks before the advancing footsteps with a swiftness that literally rendered it invisible. I conclude that it must be local in Palestine, for I did not notice it on my arrival at Jerusalem.

Charocampa nerii.—The caterpillars concealed themselves beneath the leaves of the double garden oleanders in a marvellous way, so that they could only be discovered by their droppings. In colour they were green or brown. Assuming the chrysalis state at commencement of July, those I kept in confinement emerged as moths at the close of the day between July 21st and 26th.

Charocampa celerio.—I found a dead specimen lying on the road in the German quarter at Jaffa, and on my arrival at Jerusalem I saw it, I believe, buzzing in the sunshine about the flowering creepers on a house wall. Later on its young black horned caterpillar appeared in the cobwebby corners of the vineyards, where the leaves were drilled by those of *Ino ampelophaga*; it then developed its peacock's eye, became a chrysalis, and the moth appeared during the course of the autumn.

Macroglossa stellatarum.—The Humming Bird Moth was unusually abundant at Jerusalem I infer in 1897. It is there frequently seen in the sleeping apartment, which is commonly more exposed to the sunshine than the sitting room, and it is not unfrequently dislodged from the fringe of *Pellitaria* that festoons the entrance to the numerous rock hewn caves. It likewise visits the vessels as they ride at anchor during the day off the Syrian Harbours.

BOMBYCINA.

Saturnia pyri.—It is a favourite amusement at Jerusalem to rear this moth from the caterpillar stage. It emerges from its chrysalis in April, when the bulky-eyed imago may be frequently noticed beneath a finger glass in a parlour. The caterpillars, nevertheless, do not appear to be found at Jerusalem.

Deiopeia pulchella.—Common on the sandhills at Jaffa: during April, and on May 19th I observed numerous examples of this prettily spotted moth in the vicinity of the Pool of Siloam. As it is found on waste places from Central Europe to the Cape and Australia, its caterpillars must of necessity feed on very different food plants.

NOCTUINA.

Heliothis peltigera, 10/5.—This moth in Palestine flies in the fields in the morning sunshine and settles on the flowers. I saw it at Jaffa in April in company with an *Acontia* and a *Plusia* that I mistook for *gamma*. At Jerusalem I captured two other species of the latter genus.

Spinttherops spectrum.—Miss Fitzjohn has sent me a specimen of this moth.

GEOMETRINA.

I captured examples of *Fidonia* and *Gnophos* at Jerusalem, *Synopsisia sociaria* flew to light in the evening, 12/8; at Jaffa in April I captured *Sterrha saoraria*.

PYRALIDINA.

Pyralis farinalis, the Meal Moth, 25/8.—As there are one or two steam flour mills at Jerusalem, the abundance of this moth is not to be wondered at. It is frequently started in the kitchens and rock hewn caves. This moth is omnipresent in the cooler portions of the globe.

Clodeobia usorialis, 19/5—2/6.—This little ochreous moth is a familiar object at Jerusalem. It flies with the butterflies over the thistle tops in the morning sunshine.

I found examples of *Aglossa*, *Crambus* and *Pempelia* among the rank weeds of the olive yards at Jerusalem.

Southampton: 1899.

SOME EXACT OBSERVATIONS ON THE EMERGENCE OF
ENDROMIS VERSICOLOR, L.

BY EUSTACE R. BANKES, M.A., F.E.S.

It is well known to those who have reared *Endromis versicolor* that the pupa, as mentioned by Buckler in the "Larvæ of British Butterflies and Moths," vol. iii, p. 65, progresses either partially or entirely out of its cocoon some few days before the emergence of the moth. But when drawing Dr. T. A. Chapman's attention to the fact a few years ago, I found myself obliged to confess that although I had reared one or two broods, I could not say for certain what length of time elapsed between these events. The following exact observations were therefore undertaken, with a view to settling the point, on a brood that emerged in the spring of 1894: the pupæ had resulted from ova laid in confinement by moths whose ancestors had come from Forres, Morayshire, N.B. A few of the pupæ belonging to this brood lay over until 1895, but no observations were made upon them.

The cages containing the pupæ were kept throughout in a cool game-larder, looking north and east, and with the window-spaces filled with perforated zinc instead of glass: they were examined by myself several times each day, so that the observations may be relied upon as being as exact and accurate as one can well make them without actually keeping a watch all day long.

Pupa.	Standing upright half out of cocoon.	Entirely out of cocoon.	Imago emerged.	Remarks.
No. 1, ♂	February 28th, 4 p.m.		March 10th, <i>circ.</i> 1 p.m.	Lifted out of cocoon about March 2nd.
No. 2, ♂	March 10th, 2 p.m.	March 11th, 4 p.m. ...	March 30th, 10.10 a.m.	
No. 3, ♂	March 10th, 2 p.m.		March 30th, 10.15 a.m.	Never came <i>entirely</i> out of cocoon.
No. 4, ♀	March 11th, 9.30 a.m.		March 31st, 10.30 a.m.	Never came <i>entirely</i> out of cocoon.
No. 5, ♀	March 13th, 10 a.m.	March 19th, 12.30 p.m.	March 25th, <i>circ.</i> 12.30 p.m.	
No. 6, ♀	March 13th, 3 p.m.	March 20th, 10 a.m.	March 30th, 11.45 a.m.	
No. 7, ♂	March 21st, 9.45 a.m.	March 24th, 10 a.m.	March 26th, 10.15 a.m.	
No. 8, ♀			March 30th, <i>circ.</i> 11 a.m.	Never came, even partially out of cocoon.
No. 9, ♀			March 31st, 10 a.m.	Never came, even partially, out of cocoon.
No. 10, ♂			March 31st, 10 a.m.	Never came, even partially out of cocoon.
No. 11, ♀			April 1st, <i>circ.</i> 11.30 a.m.	Never came, even partially, out of cocoon.
No. 12, ♀	* March 31st, 10 a.m.		April 3rd, <i>circ.</i> 11 a.m.	Never came <i>entirely</i> out of cocoon.
No. 13, ♀			April 6th, 10.45 a.m.	Never came, even partially out of cocoon.
No. 14, ♂ ...	— — — — —	— — — — —	April 7th, <i>ante</i> 8.30 a.m.	Never came, even partially, out of cocoon.
No. 15, ♀	* March 31st, 10.30 a.m.	April 5th, 4 p.m.	April 10th, 9.30 a.m.	

* May have reached this position at an earlier date, but, if so, escaped notice.

On a careful examination of the cocoons, and the moss, &c., among which they had been spun, in the hope of learning why six of the pupæ

that yielded imagines had never advanced, even partially, out of their cocoons, I came to the conclusion that it was probably due to there being some hard substance, such as a dried leaf or another cocoon, against the end of the cocoon, sufficient to prevent the pupa from forcing its way through, but not sufficient to prevent the more powerful and better-equipped imago from doing so. In the case of No. 11 this seemed clearly the case, for there was a hard dry birch-leaf firmly attached to the emergence-end of the cocoon, which had proved too much for the pupa, though the moth had finally freed itself by forcing a passage upwards just past the edge of the leaf.

In the case of a few cocoons from which neither pupa nor moth had appeared, I found that the moth had emerged from the pupa shell as far as the limited space permitted, but had, like the pupa, been unable to escape from the cocoon: this appeared to be due to there being some insuperable obstruction against the end of the cocoon.

It is stated by Buckler (*loc. cit.*) that the pupa, before breaking through the cocoon, pushes the cocoon from a prone to a vertical position. It may attempt to do this, but I think it is often impossible in confinement, owing to the cocoon being too firmly fixed among the dried twigs, leaves, and moss at the bottom of the cage. My belief is that the cocoon is spun among the moss with the emergence-end higher than the other, and in any case there is no need for it to be vertical before the pupa can stand upright more than half out of it, for the pupa has the power of doing so even when its cocoon is nearly horizontal.

The pupa, after breaking through the cocoon, soon works its way upwards out of it about as far as the ends of its wing-cases: there it remains upright, generally either for a few days, after which it further advances completely out of its cocoon and lies on the moss for a few days more until the emergence of the moth, or else for the whole period (which, it will be seen, varies much in duration) until the disclosure of the moth.

The Rectory, Corfe Castle:
April 13th, 1899.

HETEROCEROUS LEPIDOPTERA IN CORSICA IN 1898.

BY THE REV. T. A. MARSHALL, M.A., F.E.S.

The following list contains all the Corsican *Lepidoptera* which I met with in 1898, except butterflies. These are omitted because I

have nothing specially worthy of mention to record respecting them. The 35—40 species which occur are I believe tolerably well understood, and new discoveries must chiefly relate to the subjects of variation and metamorphosis. If the approximate number I give seems small for a S. European fauna, it should be remembered that Corsica is only the third or fourth in size of Mediterranean islands, presenting a superficies somewhat less than that of Cornwall and Devonshire united. Its limited Rhopalocerous fauna is, however, remarkable for some permanent local varieties of common species, whose peculiarities are perhaps due to corresponding eccentricities in the vegetation. Thus, to take a single instance, the common nettle of Great Britain, *Urtica dioica*, seems entirely absent, its place being supplied by *U. hispida*. This is the food-plant of *V. Ichnusa*, Bonelli, a slight but constant variety of *V. urticae*, which latter is entirely superseded by the former. The same principle of variation, no doubt from similar causes, obtains in several other species, *P. Megæra* and *Egeria*, *C. Phlæas*, &c. It is said that butterflies fly all the winter in Corsica; but this statement must not be accepted too generally; it is true only of those species which are known to hibernate elsewhere, and which show themselves here in warm sunshine during the winter months. The commonest of these is *V. Atalanta*, which may be seen even on mountain-tops in January, if near the coast; so also *Tithonus*, *Megæra*, *Mæra*, and *Phlæas*, these being all that I have noticed. The disappearance of insect life in winter is just as complete here as in England, except at the level of the sea, in sheltered places, where an entomologist may still pursue his occupation by digging, but he will see no butterflies; even the celebrated Campo dell'oro near Ajaccio becomes, for five months of the dead season, a wind-swept and very uninviting desert. The district examined by me, from the autumn of 1898 to the present time, extends from Ajaccio as far north as Vivario, including the long valley of the Gravona and its mountains, with occasional excursions to the right and left, to Ghisoni, Pastoriccia, &c. The *Lepidoptera* captured, bred, or distinctly seen, are as follows. For a certain number of names, which I had no means of ascertaining, I am indebted to the kindness of Mr. Doncaster, which I have great pleasure here in acknowledging. The more abundant species are marked *.

<i>Acherontia Atropos</i> , L.	<i>Hylophila prasinana</i> , L.	<i>Colleta pallidifrons</i> , Zell.
* <i>Macroglossa stellatarum</i> , L.	<i>Lithosia complana</i> , L.	<i>Emydia cribrum</i> , L.
<i>Sesia chrysidiformis</i> , Esp.	<i>Colleta lutarella</i> , L., var.	* <i>Trichosoma corsica</i> , Ramb.

- **Callimorpha Hera*, *L.*
Euprepia pudica, *Esp.*
 **Arctia villica*, *L.*
 **Spilosoma menthastri*, *Esp.*
 * *lubricipeda*, *Esp.*
 **Phragmatobia fuliginosa*, *L.*
 **Porthesia similis*, *Fues.*
 * *chrysorrhoea*, *L.*
Ocnieria dispar, *L.*
 **Lasiocampa pini*, *L.*
 trifolii, *Esp.*
 **Saturnia pyri*, *L.* (bred)
Drepas binaria, *Hufn.*
Cilix glaucata, *Scop.*
Pterostoma palpina, *L.* (bd)
Peridea trepida, *F.*
 **Bryophila muralis*, *Forst.*
Acronycta rumicis, *L.*
 pei, *L.*
 euphorbiae, *F.*
Leucania punctosa, *Tr.*
Dipterygia scabriuscula, *L.*
Aporophylaea australis, *Boisd.*
Laphygma exigua, *Hüb.*
Calophasia platyptera, *Esp.*
Heliophobus hispidus, *Hüb.*
 **Mamestra brassicae*, *L.*
 **Agrotis saucia*, *Hüb.* (bred)
 crassa, *Hüb.* [*F.*]
Caradrina quadripunctata,
Noctua plecta, *L.*
Tryphæna pronuba, *L.*
Anchocelis pistacina, *F.*
Dianthecia luteago, *Hüb.*
Plusia chryseitis, *L.*
 * *gamma*, *L.*
Ophiodes algira, *Gn.*
Ophiura tithraea, *Cram.*
Acontia luctuosa, *Esp.*
 lucida, *Hufn.*
Heliothis peltigera, *Schiff.*
Agrophila trabealis, *Scop.*
Thalpocharis ostrina, *Hüb.*
- **Eublemma helichrysi*, *Emb.*
 parva, *Hüb.*
Phytometra viridaria,
 Clerck
 **Catocala elocata*, *Esp.*
 promissa, *Esp.*
 diversa, *Geyer.*
Spintherops dilucida, *Hüb.*
Toxocampa pastinum, *Tr.*
Prosoplopha Jourdanaria,
Hypena rostralis, *L.* [*Vill.*]
Rumia luteolata, *L.*
Hemerophila sp. ?
Cleora lichenaria, *Hufn.*
Boarmia gemmaria, *Brahm.*
Gnophos variegata, *Dup.*
Pseudoterpnæ coronillaria,
 Hüb.
Nemoria porrinata, *Zell.*
Microloxia 2 spp.
Zonosoma linearia, *Hüb.*
Idea marginepunctata, *Göze*
 campania, *H.-Sch.*
 flicata, *Hüb.*
 **Acidalia ornata*, *Scop.*
 rubiginata, *Hufn.*
Tephriopsis sp. ?
Ptychopoda elongaria, *Hb.*
Panagra petraria, *Hüb.*
 **Sterrhæa sacraria*, *L.*
 sericeata, *Hüb.*
Aspilates ochrearia, *Rossi*
Tephriina sp. ? [*ria*, *Hüb.*]
 **Pachynemina hippocastana*
 **Hibernia aurantiaria*, *Esp.*
Larentia salicata, *Hüb. v. ?*
Emmelesia unifasciata, *Hw.*
Eupithecia signata, *Scop.*
 sobrinata, *Hüb.*
 * *vulgata*, *Hw., dk. v.*
Phibalopteryx tersata, *Hüb.*
Eubolia bipunctaria, *Schiff.*
 assimilaria, *Ramb.*
 **Anaitis plagiata*, *L.*
- **Cledeobia angustalis*, *Schiff.*
 **Aglossa cuprealis*, *Hüb.*
Scoparia frequentella, *Stn.*
 angustea, *Ste.*
 **Nomophila noctuella*, *Sch.*
Pyrallis farinalis, *L.*
 glaucinalis, *L.*
 **Pyrausta aurata*, *Scop.*
Rhodaria sanguinalis, *L.*
 **Endotricha flammealis*, *Sch.*
Eurrhyncha urticata, *L.*
Mecyna polygonalis, *Hüb.*
 **Botys ruralis*, *Scop.*
 * *nubilalis*, *Hüb.*
 flavalis, *Schiff.*
 verticalis, *L.*
 **Spilodes palealis*, *Schiff.*
Nymphula rivulalis, *Dup.*
Margarodes unionalis, *Hüb.*
Metasia ophialis, *Tr.*
Constantia sp. ? [*Mann.*]
Pterophorus giganteus,
 distans, *Zell.*
 * *pentadactylus*, *L.*
 * *meristodactylus*, *Mnn.*
Alucita hexadactyla, *L.*
Crambus inquinatellus, *Sch.*
 sp. ? [*Hüb.*]
 **Ancylolomia tentaculella*,
 **Ilithyia semirubella*, *Scop.*
Homœosoma sinuella, *F.*
Ephestia cautella, *Walk.*
Etiella zinckenella, *Tr.*
Acrobasis obliqua, *Zell.*
Pempelia adornatella, *Tr.*
Tortrix viridana, *L.*
 semialbana, *Guen.*
Tinea tapetzella, *L.*
Depressaria costosa, *Haw.*
Gelechia albiceps, *Zell.*
 fraternella, *Dougl.*
 cytisella, *Tr.*

Ucciani, Corsica :

April, 1899.

DESCRIPTION OF THE LARVA OF *ARGYRESTHIA ATMORIELLA*,
BANKES.

BY THE RIGHT HON. LORD WALSHINGHAM, M.A., LL.D., F.R.S., &c.

Smooth, shining, pale greenish yellow; head black; prothoracic plates triangular, with the apex pointing outwards, the anterior half pale chitinous brownish, the posterior half blackish; thoracic legs very short, with three black annulations, abdominal and anal legs concolorous with the body; anal plate very small, blackish. *Long.*, 5 mm. (23.II), 6 mm. (3 IV). Merton, excl. 19.V.1899.

Mining the terminal twigs of the branches of *Pinus larix*. In the spring when the leaf-buds of the larch begin to expand the leading twig for about three inches develops no leaves, and on examination will be found to be hollowed out and filled with frass from the tip downwards as far as the last well-developed bud. The larva is exceptionally found in one of the side shoots, but almost invariably attacks the leading shoot. The presence of empty pupa-cases in old mines, where a hole is always found at the side of the shoot (which is often broken off at this weakened point), seems to indicate that the habit of the larva is to pupate in the mined shoot; a specimen now bred confirms this impression. Pupa pale ochreous brown.

Long., 4.5 mm.

Merton Hall, Thetford:

February 23rd, May 20th, 1899.

CEUTHORRHYNCHUS QUERCETI, GYLL.: AN ADDITION TO THE
LIST OF BRITISH *RHYNCHOPHORA*.

BY G. C. CHAMPION, F.Z.S.

Mr. J. Edwards has recently called my attention to the fact that there were in Norfolk two distinct species passing under the name *Ceuthorrhynchidius terminatus*, Herbst—one with a 7-jointed funiculus, living in marshy places, the other with a 6-jointed funiculus, living in dry places. The marsh insect proves on examination to be referable to *Ceuthorrhynchus querceti*, Gyll., not hitherto recorded as British; the other is *Ceuthorrhynchidius terminatus*, Herbst.

Of *C. querceti* I have now seen several specimens, all from Horning Fen: two in the collection of Mr. E. Saunders, captured about thirty years ago by the late J. A. Brewer, and others taken a few years back by Mr. Edwards and Mr. Elliman. Mr. Elliman's examples (4) were found on July 4th, 1895, upon a solitary cruciferous plant, ? *Raphanus raphanistrum*.

Thomson (Skand. Col., vii, p. 270) describes the species as follows:

“Breviter ovatus, leviter convexus, supra subopacus, griseo-pubescent, suturae

basi corporeque dense albedo-squamosis, antennis, prothoracis margine antico, pedibus elytrisque apice læte rufis; prothorace fortiter, sat crebre punctato, margine apicali late emarginato-truncato; elytris apice vix muricatis. Long. fere 1 lin. ♂. Tibiis posterioribus unco armatis; segmento ultimo ventrali medio fovea impressa."

C. querceti is very like *Ceuthorrhynchidius terminatus*, Herbst (= *apicalis*, Gyll.), but may be readily separated from that insect (which is found upon *Daucus carota* in dry places) by its smaller size, the 7-jointed funiculus to the antennæ, the rufous legs, the narrower patch of white scales at the base of the elytra, the unarmed femora, &c. In fresh individuals the elytra have scattered patches of white scales dispersed over the surface, and the thorax has the sides and a narrow space along the middle also clothed with white scales. The rufous patch at the apex varies in size, often extending forwards to the base of the elytra, leaving only a common scutellar patch and a space at the sides infusate (Thomson's var. *c*). The femora are sometimes a little darker in the middle. It may be noted that in the specimens before me the club and scape of the antennæ are more or less infusate, and that the intermediate tibiæ, as well as the hind tibiæ, are hooked at the apex in the males.

The present species also bears a certain superficial resemblance to *Amalus hæmorrhous*, Herbst (= *scortillum*, Herbst), but may be easily distinguished from it by the pointed prominence on each side of the thorax, the 7-jointed funiculus, the more slender rostrum, &c.

C. querceti has been recorded from Sweden, Russia, Germany, and Switzerland, but it has not yet been detected in France.

Horsell, Woking: April 21st, 1899.

PHYTOBIUS MURICATUS, CH. BRIS.: A BRITISH INSECT.

BY G. C. CHAMPION, F.Z.S.

I possess four specimens of this species, and there are others in Dr. Power's collection, all from Lee, Kent; my own examples were found during the winters of 1870 and 1871, in moss, on the banks of a pond. This is probably the insect doing duty in British collections for *P. quadrinodosus*, Gyll., whereas the name *quadrinodosus* should be applied to the species known to us as *P. denticollis*, Gyll. (cf. Schultze, Deutsche ent. Zeitschr., 1898, p. 162). The latter is incorrectly included under *Rhinoncus* by British authors, though it has the funiculus of the antennæ 6- (not 7-) jointed. *P. muricatus*, Bris., has the elytra much broader than in *P. quadrinodosus*, Gyll., with the humeri prominent and the third to the ninth interstices muricate (in *P. quadri-*

nodosus the humeri are rounded and the fifth to the seventh interstices only are muricate). *P. quadrinodosus* has much the facies of a small *Rhinoncus*. The latter is a well known British insect, though rare in collections; it has, however, been found in some quantity in the Chatham district by Mr. J. J. Walker and myself, and specimens of it have been distributed by us from time to time. I have also taken it at Mickleham, Shirley, New Forest, Walton and Woking. The synonymy of the two species will stand as follows:—

<i>muricatus</i> , Ch. Bris. (1867).	<i>quadrinodosus</i> , Gyll. (1813).
<i>granatus</i> , Thoms. (1865), (<i>nec</i> Gyll., 1836).	<i>denticollis</i> , Gyll. (1837).
<i>quadrinodosus</i> , Cat. Sharp and Fowler.	

P. muricatus has been recorded from Paris, Germany, The Pyrenees, and Sweden. I am indebted to M. Bedel for comparing one of my specimens of it with the type, and also for comparing an example of our *P. denticollis* with the species known to him by that name.*

Horsell, Woking: May 2nd, 1899.

Stylops melittæ, Kirby, at Woking.—Yesterday I caught a ♂ example of this species in my garden, and three more were taken this morning, in the same spot, all flying in the hot sun, between 7.30 and 9.30 a.m.† Its white wings and sooty-black body, as well as its peculiar rapid, hovering flight, make it a conspicuous object, especially when seen against a dark background, like a Scotch fir. Various *Andrenæ* were noticed about in the garden at the same time, and these probably account for the presence of the *Stylops*.—G. C. CHAMPION, Horsell, Woking: May 8th, 1899.

Cryphalus fagi, Nordm., at Guildford.—I found to-day (May 18th) a small thriving colony of this rare species in a dead bough of a living beech tree on the downs near Guildford; they were burrowing in the sappier portions of the very thin flaky bark, from which they were with some difficulty extracted.—Id.

Coleoptera in the Chesham District.—On March 16th of this year I was at the village of Halton for a short time, and from a couple of large heaps of dead rushes, grass, &c., I took the following *Coleoptera*: *Pterostichus gracilis*, *Bembidium fumigatum*, fairly common, and accompanied by two of its allies, *B. assimile*, and *B. Clarki*, *Calodera æthiops*, *Callicerus obscurus*, *Homalota nigella*, *H. gemina*, rather plentiful and variable, both in size and coloration, *H. soror*, *H. exilis*, *Hygronoma dimidiata*, very abundant, *Stenus canaliculatus*, *S. circularis*, *Rybaxis sanguinea*, *Trichopteryx brevipennis*, *Cænoscotis pallida*, *Psammachus bipunctatus*, very common, *Aphthona lutescens*, *Sitones meliloti*, and *Tychius meliloti*; the last named occurs here commonly in the summer months, and *Apion meliloti* is to be found with it sparingly; *Ceuthorrhynchus melanostictus* and *Phytobius notula* were also noticed.

* In his "Table" (Col. Bassin Seine, vi, p. 180) *P. denticollis* is included amongst the species with a 7-jointed funiculus.

† Others were captured on May 12th and 13th.

Whilst at Tring, during the Easter holidays, I worked the refuse by the side of one of the reservoirs there, with, however, very indifferent results, as many of the marsh species seemed to have suffered from last year's drought, which left this particular reservoir in a very dry state. In previous years I have found here several good species among the *Staphylinidæ*, as *Calodera umbrosa*, *Homalota fallax*, *H. perezignea*, *H. autumnalis*, *H. hodierna*, *Lathrobium filiforme*, *L. quadratum*; of all these, only one specimen of *H. hodierna* occurred this year.

The rubbish examined contained myriads of the common *Atomaria linearis*; it was present in such enormous quantities as to make it a matter of extreme difficulty to separate out any species required among the small ones. The only notable insects found, besides the *Homalota hodierna*, were *H. aquatica* and *H. indubia*, *Ptenidium fuscicorne*, *Euconnus hirticollis*, and *Trachyphloeus alternans*, the last named probably from adjoining higher and chalky ground. *Ptenidium turgidum*, four specimens, occurred in a rotten willow tree.

The following were taken close to the town of Chesham; *Euryporus picipes*, two examples, in moss, in February; *Cryphalus fagi*, three dead specimens, found lying in broad sinuous galleries, just beneath the thin bark of a fallen beech branch; *Homalota vilis*, two, in dead leaves in the marshy part of a wood, and *Stenus fuscipes* in the same situation; *Gymnetron rostellum*, one, by sweeping.—E. GEO. ELLIMAN, Chesham: May 11th, 1899.

A dark variety of Psammæchus bipunctatus, Fabr.—Among the large number of *Psammæchus* referred to above, I found one very remarkable, and apparently unrecorded variety. This specimen is wholly black, with the exception of the mouth-parts, which are pitchy-testaceous, and the legs pitchy-black, the insect altogether presenting a most striking departure from the type in coloration.—ID.

Lebia cruz-minor, L., in Cumberland.—I had the good fortune to capture a beautiful specimen of this rare beetle on April 15th, in a meadow a few miles from Carlisle. I was collecting larvæ of *Melitæa aurinia* at the time, and the day being wet, the larvæ were low down among their food-plant—devil's-bit scabious. It was among a small colony of larvæ that *L. cruz-minor* was found, but whether it was preying on them, or its occurrence in their company was purely accidental, I could not decide. Diligent search among other colonies failed to produce another example, nor did a thorough examination of large quantities of moss, which grows abundantly on the same ground, meet with any better result.—F. H. DAY, 6, Currock Terrace, Carlisle: May 12th, 1899.

Pachytylus migratorius at Upper Tooting.—Since January 28th I have had in my possession a living example of this locust, which apparently came over from Italy in a cauliflower, and was delivered at a customer's door in this neighbourhood, together with the vegetable. The insect, however, was repudiated by the purchaser, and was thereupon brought by the greengrocer to me. It is still in the enjoyment of perfect health, eats well, and takes daily exercise in my study, always making for the window, and endeavouring to climb to the highest attainable spot. I notice that in leaping the wings are brought into use, just before the impetus of the bound is exhausted, and that during actual flight the elytra appear to be used, as well as the wings themselves. But the insect is very awkward while in the air, and seems to have but little notion of directing its course.—THEODORE WOOD, 157, Trinity Road, Upper Tooting, S.W.: April 19th, 1899.

A day on the Essex Marshes.—Mr. Whittle having kindly offered to show me the way, I had the pleasure of going, on May 7th, and spending some time on the salt marshes near Southend. My objects were twofold; first, to gain some idea of an aspect of nature with which I was not familiar; and, secondly, to meet with larvæ of *Agdistis Bennettii* and *Psyche reticella*. In both aspects I found a good deal to interest me, though in both, no doubt, little that is not familiar to many London Entomologists.*

I had seen the larvæ of several European species of *Agdistis*, and wished to see our British species. We met with sundry examples, of which I managed to find one or two, though Mr. Whittle first showed me where and how they occurred; they were of several sizes, one large green one nearly full-grown, the smaller ones down to less than quarter inch long, were of a rusty colour, probably corresponding to the colour assumed during hibernation; one was on the upper-side of a leaf, the rest all beneath and generally down on, or close to, the petiole. These were leaves newly grown this spring, no flower stems were yet pushing upwards. In regard to *P. reticella*, we searched long without success, and I failed entirely to find a case. Mr. Whittle's experience enabled him, however, to meet with several, which, with his usual generosity, he gave me. These were attached to green leaves of *Sclerochloa maritima*, and were fixed for pupating, one conspicuously near to the top of the blade, the others low down, and hidden by other portions of grass. The insect is said to be attached to *Spartina stricta*; this grass I did not recognise, but we looked over several species of grass, and the one we (?) found it on was the *Sclerochloa* (*Poa*) *maritima*.

The specimens met with were all within a few square yards, and from what Mr. Whittle told me of his experience, there seems no doubt that the different individuals of one brood often occur thus in a limited space, with large vacant areas. This spot was quite free from the green *conferva* with which the species is sometimes associated. Amongst the *Sclerochloa* we also found larvæ of *Crambus salinellus*; in the instance of one of these, whose tube happened to be captured with less than the destruction that usually happens to them in the process of finding, I found two portions of grass protruding from the tube. Examining these, I found them to be loose portions of grass, with one end right down in the larval tube. The obvious inference was that the larva bit off portions of the grass and drew them down into the tube to be leisurely devoured.

This was to me so novel a habit amongst our English *Lepidoptera*, that I endeavoured to repeat the observation, but without success, the process of finding the tube of the larva always disarranging its domestic arrangements too profoundly to make any observation possible. Mr. Whittle undertook to make some observations on the larva in captivity. I hear from him under date May 11th: "Noticed yesterday evening a quite fresh blade of grass loose in a tube of *Crambus*; I removed it and placed the tube at a distance of some two inches from the grass, thinking that another blade might be drawn in, and that I might perhaps get a chance of watching the process. Nothing fresh in the tubes this evening."

This seems to me conclusive, but for one possibility, viz., the tubes are built very upright, and are tolerably open at the top, so that it is just possible that the larva bites through a blade of grass standing vertically just over the tube, and that it then drops into the tube, accidentally, and without any definite intention on the

part of the larva. Even if this be so, it must be a very frequent accident, one that is convenient and useful to the larva, so much in fact an ordinary element of its life-history, that it must be an occurrence contemplated in the perpendicular placing of the larval tube, even if it be not actively assisted by the larva actually pulling the grass into the tube.—T. A. CHAPMAN, Betula, Reigate: May, 1899.

Scolopostethus puberulus, Horv., and other Hemiptera at Seaton, Devon.—I found the above species of *Scolopostethus* rarely in damp moss and at the roots of grass, &c., at the base of the chalk cliffs to the west of Seaton; it was rather rare and difficult to obtain, and I failed to get any macropterous examples. It has only hitherto been recorded from Norfolk, Bexhill, and Oreston, Plymouth. The other Hemiptera I noticed of any rarity were *Monanthia dumetorum*, of which I captured a few by beating an old lichen-covered blackthorn; this species has generally been recorded in this country as beaten from whitethorns, but on the Continent it occurs on various trees of the Rosaceous family; and *Tropistethus holosericeus*, which was fairly abundant in moss on the chalky slopes behind the Landslip between Seaton and Lyme Regis. This is possibly the same locality where Dr. Power took it, as recorded by Douglas and Scott, Brit. Hem., p. 201.—EDWARD SAUNDERS, St. Ann's, Woking: May 15th, 1899.

Reviews.

THE LARVÆ OF THE BRITISH BUTTERFLIES AND MOTHS, by (the late) WILLIAM BUCKLER: edited by GEO. T. PORRITT, F.L.S. Vol. viii (the concluding portions of the *Geometra*). 8vo. Pp. 120. Plates cxxviii—cxlvii. London: Ray Society. 1899.

After much vexatious delay this extensive undertaking is now complete to the end of the *Geometra*. In the volume before us the larvæ of 133 species are figured: of these 46 belong to *Eupithecia* in the broad sense out of a possible total of about 49, so that as far as figures are concerned, the work amounts to a nearly complete monograph of the British species of the genus: for *Melanippe* 12 species are figured, and so on. And it is not a case of single figures, for (in *Eupithecia* especially) there are sometimes a dozen for one species. Those who have been privileged to see the original drawings know with what microscopic delicacy these small and highly-marked larvæ are treated, and we venture to think the firm of chromo-lithographers to whom the reproduction was entrusted have succeeded in attaining perfection as near as is possible, and in this respect more than a word of praise is due to Mr. Porritt for the vigorous manner in which he insisted on exactitude. Unfortunately Mr. Buckler did not publish descriptions of many of the species, nor did he leave any in MS., so that notwithstanding quotations from all available English sources, there is no text to accompany the figures of a considerable number. Mr. Buckler left a large number of figures and, also descriptive matter for the *Pyralidæ* and *Micros*; these are naturally somewhat disconnected, but we understand the Ray Society has resolved to utilize them for another volume, which will bring this monumental work to a close.

THE COLEOPTERA OF SUFFOLK: by CLAUDE MORLEY, F.E.S., &c. Pp. xiv and 113, 8vo. Plymouth: James H. Keys. 1899.

Enthusiasm and singleness of purpose are sure to win in the long run. It is well known that Mr. Morley has for several years been devoting himself to compiling, and collecting materials for, an entomological fauna of Suffolk, with especial reference to the *Coleoptera*, and this very meritorious list is the first result. It

commences with a preface of 12 pages, treating chiefly on bibliography and the history of various collectors and collections, rendered additionally interesting from the fact that the locality is classic ground to the entomologist, on account of the labours of the Rector of Barham. The whole work is well printed and got up, and there is an outline map. The list itself has copious local references: no doubt, as in all works of this nature, its very completeness may occasionally be a source of error in connection with the records of some of the older authors, where the actual specimens do not exist, or are not labelled. The number of species recorded is 1763 out of a British total of 3264, or much more than half. In 1893 Mr. Edwards published a list for the adjoining county of Norfolk (*cf.* Ent. Mo. Mag. (2), iv, p. 264), and Mr. Morley institutes a comparison, the advantage being in favour of Suffolk, but the difference is not great. An analysis also shows to the advantage of the more southern county in nearly all the larger groups, the most noticeable discrepancy on the other side being in the *Hydradeptera*, which is not surprising considering the much greater extent of fen in Norfolk. This list is indispensable to British Coleopterists, and we trust that ere long each county will have a similar record of its beetle fauna.

Obituary.

Prof. Achille Costa.—On the cover of the No. for February last we briefly announced the death of this well-known Italian entomologist: we now give a few details of his life. He was born at Lecce on August 10th, 1828, and died of cerebral hæmorrhage at Rome on November 17th last while on a visit in connection with a *Phylloxera* committee of which he was a member. He studied medicine and qualified: in 1860 he succeeded his father in the Professorship of Zoology at Naples. His writings were very numerous, and probably he is best known by the "*Fauna del Regno di Napoli*," much of which was written by his father, but the *Coleoptera* and *Neuroptera* by the son. Until recently this work was difficult of access. He travelled much, visiting Palestine, North Africa, Turkey, &c., and more recently, for several successive years, the island of Sardinia, collecting much material which enriched the Naples Museum: and he wrote much independent matter on *Hemiptera*, Economic Entomology, &c., &c. The writer of this notice always found him a most obliging and courteous correspondent, and the fact that he retained his position during and after the troublous times that culminated in the merging of the Kingdom of Naples with that of Italy, shows that he was held in esteem by all parties. He was long a member of the Entomological Societies of France and Italy. For information as to his early history we have to thank his fellow countryman, Dr. C. Ribago, of Portici, Naples.

Dr. William Nylander, formerly well known as a writer on *Hymenoptera* (especially ants), but who of late was occupied almost exclusively on cryptogamic botany (lichens), died very recently in France, where he had long been settled in professional connection with an establishment for the insane. He was born in Finland in 1822, and some of his earlier entomological publications appeared in that country, but most of his later ones in the "*Annales*" of the French Entomological Society.

Dr. Charles Brongniart, F.E.S.—We much regret to announce the death at the early age of 40 of Dr. Brongniart of the Musée d'Histoire Naturelle at Paris, the describer of the gigantic fossil insects from the Carboniferous of Commentry, etc. Further particulars will follow.

NOTES ON CERTAIN PALÆARCTIC SPECIES OF THE GENUS
HEMEROBIUS.

No. 3—*H. STIGMA* (*LIMBATUS*), AND THE GROUP OF *H. PINI*.

BY ROBERT McLACHLAN, F.R.S., &c.

The species here considered are apparently exclusively attached to Conifers, the inference being that these trees furnish forms of the lower *Rhynchota* on which the larvæ feed.

They form an exceedingly puzzling assemblage. In the first species (*stigma*) there are certain characters that will enable it to be separated, even by the ♂ appendages (though these are formed quite after the same plan), and it is one of the least variable in the whole genus.

But in treating of the "group" of *pini* one is almost driven to despair. Neither my excellent fellow-worker Mr. Morton, nor myself, has been able to discover any tangible ♂ characters (and from this cause figures are given for only one "species"). Mr. Morton has gone to the trouble of making many figures; these show slight variation in the depth and form of the excision between the branches of the fork of the appendages, but upon analysis these slight differences are not correlated with characters in the markings, &c., that appear to be specific, and are probably due to alterations in drying. On the other hand three species appear to exist on *general* characters. Considered from the ♂ characters only, we are apparently dealing with *one protean species*, and my coadjutor Mr. Morton, perhaps with reason, is of opinion that this is so; he thinks there are individuals that show transition states in the general characters: in this case there would be one species ("*pini*" by right of priority) divided into three "races." I have wavered in deciding upon a course to adopt, and have ended by accepting three "species" provisionally, dependent upon more exact examination of living materials. If nothing tangible be discovered we may, I think, look upon all three as one species, for it appears to me scarcely possible that the all-important ♂ characters should fail in their value.

Dr. O. M. Reuter ("*Neuroptera Fennica*," 1894) discovered a very useful neural character whereby to separate *stigma* from the *pini* group. I use it in the table given below:—

Thorax unicolorous. A small transverse nervule (very rarely absent) placed between the radius and the upper cubitus *close to the base* of the wing *H. STIGMA*.

Thorax with a more or less distinct pale median band. A strong transverse nervule (very rarely absent) between the origin (or nearly so) of the first sector of the radius and the upper cubitus, *distant from the base* of the wing... *H. PINI*, &c.

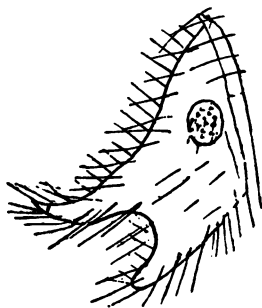
H. STIGMA, Steph. (1836).

pini, Steph. *partim sec. collect.**irroratus*, Steph.*strigosus*, Zett. *sec. Wallengr., Rostock, Reuter.**limbatus*, Wesmael, Brauer, McLach., Meyer-Dür, &c.*phaleratus*, Hag., *partim* (1858), *nec* Schneider.

Head and thorax wholly pale shining brown. Abdomen fuscous in the dry insect; its apical half above densely clothed with golden-grey hairs in the ♂. Antennæ distinctly annulated. Legs whitish-yellow, darker at the knees, the terminal tarsal joint blackish. Anterior wings rather long-oval, pale whitish-grey, in which are numerous angulate darker grey markings on the regular and closely placed dark points on the venation, but these angulate markings are absent on the dorsal and apical margins (below the lower cubitus and beyond the outer gradate nervules), which are broadly pale brownish-grey, without markings: there is almost invariably a fuscous sub-basal point (at the constriction between the cubiti), and often one or two darker points connecting with the inner gradate series, which, and also the outer, are frequently clouded with smoky-fuscous (but the coloration is remarkably uniform as a rule, the markings more evident in the ♀); pterostigmatic region (as also in the posterior wings) very long, subopaque, and often very distinctly reddish. Posterior wings without spots, the dorsal and apical margins as in the anterior, but paler.

Expanse, 15—17 mm. (rarely more or less).

In the ♂ the appendages are yellowish, more or less dusky, the basal portion



broad, deeply furcate, the lower branch shorter and thicker than the upper, both branches of about the same curvature if viewed laterally, but both are interlocked with the opposing

branches, and these, if viewed in front, are not on the same plane (but alteration in position occurs in drying); the upper branch is very acute, and the up- and in-turned apex has an appearance as of a false articulation immediately before the tip.

Very common in Britain. It commences to appear in the first fine days of early spring, and there is probably a succession of broods. Wide-spread in Europe (I have it from Portugal and Corsica), but perhaps localized, for I do not appear to have met with it personally during my excursions in the Vosges and Schwarzwald.

H. PINI, Steph. *partim* (1836), McLach., Wallengr., Rostock, Reuter.*phaleratus*, Hag. (1858), *partim*.

Head and face dingy yellowish, sometimes brownish. Antennæ distinctly annulated. Pronotum fuscous with a narrow median longitudinal dingy yellowish line, which expands on the meso- and meta-notum. Legs whitish-yellow; terminal tarsal joint blackish. Anterior wings oval, pale grey, the dorsal and apical margins somewhat darker (but much less so than in the last species), the nervures regularly and closely spotted (with angulate markings as in the last species), but often (not always) without spots in the area between the two gradate series, these gradate series placed *widely apart, irregular and divergent*: the fuscous markings are strong; there is a series of small spots along the radius, a large sub-basal spot on the constriction between the cubiti often continued upward to the radius, one or more spots on the lower cubitus, often connected with an irregular fascia on the inner gradate series, and there is a second fascia on the outer gradate series (as these fasciæ follow the nervules they vary in direction as the nervules vary); pterostigmatic region elongate, subopaque, yellowish, scarcely reddish. Posterior wings pale grey, iridescent, pterostigmatic region strongly defined, the costal and transverse nervules, and part of the longitudinal nervures, blackish. Expanse, 12—16 mm.

In the ♂ the apical dorsal half of the abdomen is not so strongly clothed with hairs as in *stigma*. The appendages are formed after the same plan, but the lower branch of the fork is longer (as long as, or longer than, the upper), and furnished internally at the apex with a few stout, straight, spiniform hairs: as a rule the branches of the opposing forks are less strongly interlocked than in *stigma*, the opposing points often scarcely more than touching (but much depends upon drying).

This form most approaches *stigma*, but may be distinguished by the neural character mentioned above, the pale thoracic line, the more decided wing markings, and by the small, yet evident, difference in the appendages.

In Britain it is rare, and usually taken only singly, and of small size. On the continent of Europe it is wide-spread, and apparently often abundant. I have it from Belgium, Switzerland, Savoy, the Pyrenees, Vosges, Schwarzwald, Bohemia, Sweden, Finland, &c.

A North American insect in my collection from Delaware can scarcely be other than a ♀ of this species or race.

The specimens of "*pini*" in Stephens' collection are a mixture of my *pini* and *stigma*; there is no MS. label, but a specimen with a *printed* label is the insect now under consideration.

H. LIMBATELLUS, Zett. (1840) *sec.* Wallengr., Rostock, Reuter.

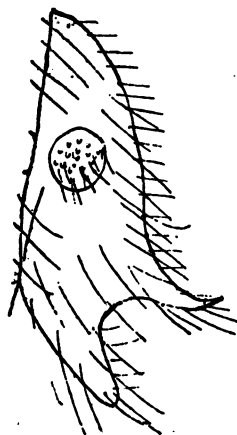
Race of *pini*?

phaleratus, Schneider.

punctatus, Göszy, Brauer.

Head and face shining pale yellow (varying to pale castaneous). Antennæ pale yellow, faintly annulated. Pronotum blackish-fuscous at the sides, with a broad, longitudinal, median, yellowish band continued on the meso- and meta-notum. Legs

whitish-yellow; coxæ and trochanters fuscous; occasionally a brownish mark at the apex of posterior femora and tibiae externally. Anterior wings oval, whitish-grey, the dorsal and apical margins often faintly tinged with brownish-grey (as in the preceding); venation with black points (the angulate grey markings very faint), which are usually absent in the area between the gradate series (and also sometimes for a large space on the disc), these gradate series *usually placed close together and parallel*, the upper portion of the inner series abbreviated or absent; the usual



dark markings are as follows: a series of points at the origin of the sectors, these sectors often 4 in number (or 4 and 3 asymmetrically); a large spot at the sub-basal cubital constriction, continued in a more or less interrupted manner to the inner gradate series which forms a fascia, and a second maculate parallel fascia is on the outer series, these markings are much more regular than in *pini*; pte-

roostigmatic region long, opaque, yellowish to reddish, and also in the posterior wings, which are as in *pini*.

Expanse, 14.5—18 mm.

Appendages of the ♂ apparently as in *pini*.

I have not examined examples from Scandinavia and Finland, and accept this as *limbatellus*, Zett., on the authority of Wallengren and Reuter. It appears to be common in the mountain ranges of Germany, Austria, Switzerland, Pyrenees, &c.: occurs in the Vosges, very common in the Schwarzwald.

As British I have seen only one example, a ♀ taken by myself at Black Park, Buckinghamshire, on June 25th, 1873.

Differs from *pini* in its average size, the characteristic markings of the anterior wings, the closely-placed parallel gradate series, and also in the frequent presence of *four* sectors (of 25 examples examined, 14 have 3 sectors in both anterior wings, 7 have 4 in both, and 4 have 3 and 4 asymmetrically).

II. *ATRIFRONS*, McLach. (1868), Wallengr., Rostock, Reuter.

Race of *pini*?

fasciatus, Göszy (1852, pre-occupied), Brauer.

Head: *face wholly deep shining black* (paler in immature examples); *above black at the sides, shining pale yellow in the middle, which colour is continued as a*

very distinct median longitudinal band on the three segments of the thorax, which are black at the sides. Antennæ distinctly annulated with blackish. Legs pale whitish-yellow, the terminal tarsal joint blackish. Anterior wings oval, the ground colour whitish, the neuration with short black streaks, placed in the dark markings, and frequently absent in the area between the gradate nervules; these gradate series rather wide apart, irregular, and somewhat sinuous (more as in *pini* than in *limbatellus*): the dark markings (in strongly marked individuals) as follows:—a large blackish spot at the sub-basal cubital constriction, extended to the radius as a smoky band, continued along the lower cubitus, and extending along the inner gradate series as a fascia, a similar fascia on the outer gradate series, and three or four less distinct fasciæ (often furcate in the upper half) between the inner series and the base, the apical and dorsal margins often clouded with smoky; all these markings are liable to be broken up, and as a matter of fact they (excepting the “gradate” fasciæ) mostly exist only as marginings to the black streaks on the neuration, and they are subject to great variation, but when fully present they give the wings a distinctly pretty pattern (in the original typical British specimens they were ill-defined): pterostigmatic region long, subopaque, whitish, longer and more defined in the posterior wings, which are whitish with the costal and transverse nervules, and some of the longitudinal neuration in the apical half, blackish.

Expanse, 12—18 mm.

Appendages of the ♂ apparently as in *pini*.

It remains to be proved whether all the preceding three species or races are co-extensive in distribution. I have *atrifrons* from Britain, Sweden, Finland, Belgium, Vosges, Schwarzwald and other parts of Germany, Savoy, Val Anzasca, Upper Engadine, Austria, Bohemia, and Eastern Siberia. In Britain it is rare, and the original typical examples were of very small size, but I have since seen full-sized British specimens.

Judged by the deep black face, the very distinct pale dorsal stripe, and the character of the markings, few could doubt that in *atrifrons* we have a very distinct species; yet I am much inclined to the opinion that it is a “race” at the most, and one or two examples leave one in that position of uncertainty that would not exist were it possible to define any differences in the appendages.

In taking leave of this troublesome group it is with the hope that the questions at issue may soon be definitely settled; and were I inclined to make a forecast it would be in the direction of confirmation of Mr. Morton’s idea that *pini*, *limbatellus* and *atrifrons* form only one species. Dr. Reuter (Neurop. Fenn.) is inclined to consider *pini* and *atrifrons* identical, and *limbatellus* as apparently distinct.

Lewisham, London: May, 1899.

TWO ADDITIONAL BRITISH SPECIES OF *ANDRENA*.

BY EDWARD SAUNDERS, F.L.S.

ANDRENA RUFICRUS, Nyl., Adn. Mon. Apum Bor., p. 217 (1847).

♂. Black; apex of, and sometimes the entire, posterior tibiae, and the posterior metatarsi, ferruginous; head densely clothed with long white hairs, intermixed at the sides of the face and on the vertex with black ones; antennae with the 3rd joint slightly longer than the 4th, 4th and 5th subequal; mandibles simple at the base; head and thorax dull, with the surface rugulose and shallowly punctured, the latter and legs clothed with greyish-white hairs; propodeum finely rugose; wings almost clear, nervures testaceous; abdomen with a fine alutaceous surface, with very vague, shallow, scattered punctures; apices of the segments with a few white hairs, more abundant laterally; apical segment and all the segments beneath clothed with whitish hairs.

♀. Black, posterior tibiae and metatarsi bright ferruginous; face clothed with pale fulvous hairs, margined with black hairs at the sides; 3rd joint of the antennae rather longer than the 4th and 5th together; thorax clothed with fulvous hairs, those of the under-side much paler; surface dull, finely rugulose and punctured, posterior tibiae and tarsi clothed with bright fulvous hairs; abdomen rather shining, finely alutaceous, the bases of the segments with a fine shallow, rather remote, puncturation; the apical margins narrowly piceous, clothed with a few pale hairs at the sides; apical fimbria brownish; apices of the segments beneath fringed with pale hairs.

Long., 8—10 mm.

Three males of the above species were taken by Mr. W. Evans, of Edinburgh, in dandelion flowers at Aberfoyle, Perthshire, in April, 1896. It is said by Continental writers to be one of the earliest spring bees, and April in so northern a locality as Aberfoyle quite bears this out. Mr. Evans has very kindly given me one of the specimens, and from this and a continental female I have drawn up the above diagnosis:—

The ♂ looks like a small *Clarkella*, as Nylander remarks, or a *præcox*, the former may be known at a glance by the longer third antennal joint, the latter by the large mandibular tooth. It should follow *angustior* in the list.

ANDRENA NIVEATA, Friese, Term. Füzetek, vol. xi, 1887, p. 25.

I have for years had some specimens in my collection of a species closely allied to *nana*, Kirby, but which I had doubts as to the distinctness of; they were caught at Worthing in 1888, and I separated them off from *nana* by the conspicuous white fringes to the abdominal segments, but saw no other distinctive character to depend upon. Lately, on reading over Friese's description of his *niveata*, I think my specimens must be referable to that species; it is true that he says,

"Thorace . . . nitido," whereas in my specimens the surface of the thorax is finely rugulose, and scarcely shining, but in other respects his description so exactly fits my specimens in both sexes that I have little doubt as to their identity. My attention was recalled during the last few days to this species by a ♂ and ♀ sent to me for identification by Miss E. Thoyts, of Sulhampstead Park, near Reading, which agree exactly with my Worthing specimens, and are very easily separable at a glance from *nana* by the wide, snow-white, bands of the abdomen.

♂. Third joint of antennæ rather longer in proportion to the 4th than in *nana*, K.; thorax rather more remotely punctured on the disc, and the rugulosity of the surface slightly finer; abdomen duller and more closely punctured, the depressed apical margins exceedingly closely and finely punctured, whereas in *nana* they are shining and finely alutaceous; 2nd, 3rd, and 4th, segments with a rather broad band of white hairs widely interrupted on the 2nd.

♀. This sex differs from *nana* in the browner tint of the hairs of the thorax, the duller abdomen, with dull, densely punctured, apical depressions, and wide, snow-white, lateral fringes on the 2nd and 3rd segments, and an entire fringe on the 4th; 5th clothed with whitish hairs, intermixed with golden at the apex, where they form a dense fimbria; segments beneath punctured, with long apical fringes.

Long., 7—8 mm.

Worthing, June, 1874, 1 ♀, and again in June, 1888, when I caught 3 ♂ and 3 ♀ near the sea coast to the west of the town. Sulhampstead, near Reading, Miss E. Thoyts, June, 1899.

St. Ann's, Woking:

June 17th, 1899.

ÆTHUS FLAVICORNIS, FAB.: A GENUS AND SPECIES NEW TO
THE LIST OF BRITISH HEMIPTERA.

BY EDWARD SAUNDERS, F.L.S.

A single specimen of this important addition to our fauna was found by Mr. W. Holland, of Oxford, at Freshwater, Isle of Wight, in July, 1895; unfortunately, a more exact locality was not recorded, as Mr. Holland was at the time collecting *Coleoptera*, in fact searching for *Harpalus tenebrosus*, and did not notice that he had taken anything unusual; lately he was trying to name his captures in this family, and failed to be able to make this one agree with any of our described species, he, therefore, referred it to me, and I am very glad to have this opportunity of bringing it forward in our Magazine. Puton, in his Synopsis des Hémiptères Hétéroptères de France, says that it is common in the sand of the Dunes all along the shore, and mentions

specially Dunkirk and Calais as localities. It should, therefore, be looked for on the sandhills of our southern coasts. Its nearest ally on our list is *Geotomus punctulatus*, Costa, from which it is generically distinct by the spinose margin of the head, and the much greater convexity of the body; in this latter respect it more closely resembles the species of *Gnathoconus*, but the very densely spinose legs of *Æthus*, and the long hairs along the margins of the thorax and elytra, will distinguish it at once. The following is a short diagnosis of the species:—

ÆTHUS FLAVICORNIS, Fab., Ent. Syst., iv, p. 124, No. 170.

Dark piceous-brown, shining, short, subelliptic, convex; margins clothed with a series of long reddish hairs, abdomen beneath also with scattered long hairs; margins of the head reddish, set with short brown spines; antennæ sometimes pale, but in this example dark brown like the head; pronotum largely punctured at the base, scutellum dark brown, its apex paler, largely and somewhat remotely punctured; elytra, especially the clavus, generally rather paler than the scutellum, largely punctured; membrane brownish-white; tibiæ very densely spinose; tarsi pale testaceous.

Long., $3\frac{1}{2}$ mm.

This species varies very much in colour, and, according to Puton, in puncturation.

St. Ann's Woking:

June 8th, 1899.

COLEOPTERA OF THE SCILLY ISLANDS: A SUPPLEMENTARY NOTE.

BY G. C. CHAMPION, F.Z.S.

In the Ent. Mo. Mag. for October, 1897 (pp. 217—219), I gave a preliminary list of the *Coleoptera* of the Scilly Islands, chiefly based upon my own captures there in July of that year. I have recently come across a paper on the same subject by the late Frederick Holme, published in vol. ii of the "Transactions of the Entomological Society of London" (pp. 58—64), containing a list of species found there in July and August, 1836.

Mr. Holme's paper is interesting from the fact of its containing the original description of *Cafius* (*Remus*) *sericeus*, an insect I did not meet with in the Islands. Amongst the species enumerated by him, the following are additions to my list, omitting those of which the determination is certainly incorrect.

These additions (36) bring the total up to 162 species, as against the 126 recorded by me.

Cicindela campestris, Linn., common on the downs in St. Mary's, and more rarely on some of the other islands; *Loricera pilicornis*, Fabr.; *Calathus fuscus*, Fabr.; *Pterostichus anthracinus*, Ill., *P. nigrita*, Fabr.; *Harpalus latus*, Linn.; *Anisodactylus binotatus*, Fabr., var. *spurcaticornis*, Dej.

Calambus inaequalis, Fabr.; *Laccophilus interruptus*, Panz.

Cercyon littoralis, Gyll.; *Sphæridium bipustulatum*, Fabr.

Aleochara fuscipes, Fabr., found in a dead specimen of *Geotrupes typhæus*, St. Mary's; *Tachyporus hypnorum*, Fabr.; *Ocytus similis*, Fabr.; *Castus sericeus*, Holme; *Philonthus splendens*, Fabr., *P. politus*, Fabr.; *Lathrobium multipunctum*, Grav. (*punctatostriatum*); *Lesteva longelytrata*, Goeze (*bicolor*).

Silpha atrata, Linn.; *Saprinus quadristriatus*, Hoffm.

Aphodius fossor, Linn., *A. fmetarius*, Linn., *A. scybalarius*, Fabr.; *Geotrupes vernalis*, Linn., *G. mutator*, Marsh., *G. sylvaticus*, Panz.; *Onthophagus nuchicornis*, Linn.; *Melolontha vulgaris*, Fabr.; *Rhizotrogus scutellarius*, Linn.; *Phyllopertha horticola*, Linn.

Ptilinus pectinicornis, Linn., in houses.

Anthicus humilis, Germ.

Liophlaeus nubilus, Fabr.

Psylliodes napi, Koch; *Gastrophysa polygoni*, Linn.

Mr. Holme enumerated altogether 120 species, but at least 20 of the names represent nothing more than varieties or synonyms. It is worth noting that he mentions (p. 61) capturing two specimens of a *Psammobius*?, which were devoured by *Cassi* in his bottle. His *Aleochara cursor* = *nitida*, Grav. Where no locality is mentioned, it is presumed that St. Mary's is intended. The determination of *Pterostichus anthracinus* and *Saprinus 4-striatus* must be regarded as doubtful.

Horsell, Woking:

March 21st, 1899.

Yellow variety of Euchelia jacobææ.—On the 19th inst., my son, Arthur Brasser Hearle, captured in an old garden at Brockhurst Cottage, near Gosport, a female specimen of *Euchelia jacobææ*, in which the crimson colour is replaced by bright yellow. This I believe to be most unusual. The insect is a little smaller than the ordinary type.—PARKINS HEARLE, 12, Foster Road, Alverstoke: June 21st, 1899.

Lepidoptera at Woking, Surrey.—I took a ♀ of *Dasyampa rubiginea* at willows in a wood near here on April 15th, and also specimens of *Tæniocampa miniosa* and *populeti*. On the 14th I took *Xylina semidrunnea* at rest on a paling.—H. A. SAUNDERS, St. Ann's, Woking: April 16th, 1899.

Philopotamus montanus, var. *chrysopterus*, on the Pentland Hills.—On April 17th I went over the Pentlands with the view of seeing whether any *Perlida* were yet out on the Logan Burn. The northern slopes of the hills were covered with snow, which had fallen the previous night, and some of the distant Perthshire peaks

stood out very white. A cold wind drove up from time to time heavy clouds, and although very bright intervals alternated with the frequent snow showers, insects could not be expected to appear on the wing under such conditions.

Turning stones showed that emergence was taking place, notwithstanding the apparently adverse conditions, and many small *Perlides*, of three or four species, were seen. I had also the pleasure of finding two examples of the above named var. of *Philopotamus montanus*. This was at a streamlet not very far from its sources, and under circumstances somewhat similar to those under which the same variety occurs in South Lanarkshire. The altitude of the locality in the Pentlands is about 1000 feet. It is interesting to know that this pretty form is found in different localities, and observations as to the character of its haunts are desirable. Those known to me are both at some altitude, and not far from where the springs well up, which give rise to the streamlets in which the larvae live.—KENNETH J. MORTON, 13, Blackford Road, Edinburgh: April 29th, 1899.

Osmia parietina, Curt., in Perthshire.—In September, 1898, when searching for *Coleoptera* on a hill-side near Blair Atholl, Perthshire, I discovered several clusters of bee cocoons adhering to the under-sides of stones. A number (perhaps the majority) of the cocoons were open and empty, the inmates having emerged; but a good many were still closed, and on opening a couple I found in each, in a torpid state, a small reddish bee which Mr. Edward Saunders has since identified for me as the rare *Osmia parietina*, Curt., a species which has not been recorded from any part of Britain for many years. From some cocoons brought away with me about a dozen bees (all dead) and two living Chryside (apparently the rare *Chrysis hirsuta*) were extracted this spring.—WILLIAM EVANS, 38, Morningside Park, Edinburgh: June, 1899.

Stelis octomaculata, Smith, near Maidstone.—On June 3rd I visited the hills above the village of Wrotham in quest of *Andrena proxima*, of which species I had taken several specimens last year, and succeeded in taking a ♂ and ♀; also *Osmia spinulosa*, *O. bicolor*, *O. aurulenta*, and two ♂ and a ♀ of what I took to be *O. leucomelana*, but which proved on investigation to be *Stelis octomaculata*. I visited the spot a fortnight later in company with Mr. F. W. L. Sladen, when we succeeded in taking another ♂, and also two ♀ of *O. leucomelana*.—H. ELGAR, 3, St. Michael's Terrace, Fant Road, Maidstone: June, 1899.

[This is a most interesting capture, as *Stelis octomaculata* has not been recorded from Britain since August, 1872, when the late Mr. F. Smith took one at Sidmouth; he previously recorded it from Hawley, Hants, and as bred by Mr. Thwaites from cells of *Osmia leucomelana*; it has also occurred at Exeter. I have myself frequently met with *Osmia leucomelana*, and have always kept a sharp look out for its inquiline, but have never had the good fortune to meet with it. In 1893 the *Osmia* occurred in some numbers on Woking Common, burrowing, not as it usually does in bramble stems, but in the side of a cart rut, and I made sure of securing the *Stelis*, but it never put in an appearance, possibly the unusual habitat adopted by the *Osmia* on this occasion did not suit it. I am much indebted to Mr. Elgar for a fine specimen of this rarity.—E. SAUNDERS].

Harpalus latus, L., var. *erythrocephalus*, F.—This well marked variety of *latus* has recently occurred in some numbers under flood refuse on the banks of the river Lleidr, Dolwyddelen, Carnarvonshire, North Wales. My friend, Mr. W. E. Sharp, of Ledsham, who found this interesting form, tells me that 75 per cent. of the total *H. latus* there were this variety. Unfortunately, believing that the specimens were immature, he secured but a small number. Although *H. latus* is a very common insect on the Cambrian Mountains at high elevations, he has never met with this form before. The flood refuse referred to was undoubtedly derived from the side of Moel Siabod. These specimens differ from the type in having the head and mandibles of a dark red. The red side-border of the thorax is more marked; the colour being continued round the margins of the elytra; the scutellum also is reddish. The variety has hitherto found no place in our lists or handbooks.—E. A. NEWBERRY, 12, Churchill Road, Dartmouth Park, N.W.: June 16th, 1899.

Pissodes notatus, Fabr., at Woking.—I beat a single specimen of this insect from a fallen Scotch fir in this neighbourhood on May 27th, the first I had seen alive in the south of England, though the late F. Smith once found it in plenty at Bournemouth. *P. notatus* seems to occur sporadically in various southern localities, and it may be gradually spreading (like *Asemum striatum*) to places where pines are planted. It was once found by Wollaston at Yaxham, near East Dereham, Norfolk.* This species is much more widely distributed than its congener *P. pini*, Linn., which is the commoner insect of the two in Scotland; and in some parts of the continent *P. notatus* is so abundant as to be destructive to the pines.—G. C. CHAMPION, Horsell, Woking: June 16th, 1899.

Olibrus flavicornis, Sturm, at Sandown, I. W.—Mr. E. Newbery (Ent. Record, xi, p. 136) has recently recorded one or two additional localities for this species, originally introduced by the late E. C. Rye as British, under the name *O. helveticus*, Tourn., upon the authority of an example taken by myself at Caterham in 1872. It is therefore worth noting that other specimens were subsequently found by me at Caterham, and that last year I found three more at Sandown, I. W.—Id.

Granary beetles at Strood, Kent.—On the outer walls of a granary near the railway station at Strood, *Bruchus pisi* is often to be met with, and on passing the place a few weeks ago I was much pleased to see the pretty and very active little *Alphitophagus bifasciatus*, Say (= *4-pustulatus*, Steph.), alive for the first time in England, in the same situation. This latter beetle being a desideratum, I sought and was kindly granted admittance to the premises, with the result that *Alphitophagus* was found in the greatest abundance, chiefly under old damp boards, pieces of sacking, &c., in the granary yard, and accompanied by *Palorus Ratzburgi*, Wissm., in almost equal numbers. The other beetles found in the same situations include *Omalium concinnum*, *Lamophloeus pusillus* and *ferrugineus*, *Silvanus surinamensis*, *Cryptophagus cellaris* and *bicolor*, *Atomaria munda*, *Tenebrio obscurus* and *Tribolium ferrugineum*; a few specimens of *Monotoma subquadrifoveolata* also turned up,

* Ann. and Mag. Nat. Hist., 1848, 1, p. 295. The species is not included in Mr. Edwards' Norfolk List.

and a good series of *Mycetophagus 4-guttatus* (which has previously occurred at Cobham Park in rotten wood and cut grass) was found in a small quantity of damp straw, along with one or two specimens of a *Heterothops*, apparently *H. prævius*, Er. I also found one example of a *Ptinus*, which was unfortunately lost, but was pretty certainly identified with *P. subpilosus*, Müll., the only specimen of which hitherto met with in the district was found in a dry dead bird at Cobham Park as long ago as 1875. Inside the buildings *Blaps similis* was not uncommon, hiding under sacks, &c., in dark corners; but *Calandra granaria*, that traditional granary pest, was quite scarce, and *Bruchus pisi* could only be found casually on the walls as before.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: June 17th, 1899.

Reviews.

UNDER THE AFRICAN SUN: by W. J. ANSORGE, M.A., M.R.C.S., &c. Pp. 355, royal 8vo, with 134 illustrations from photographs by the Author, and two coloured plates. London: W. Heinemann. 1899.

A profusely illustrated and highly interesting book of travel chiefly in tropical East Central Africa. The author, who was Government medical officer in Uganda, had exceptional opportunities, and made the most of them. Beyond a few references to locusts, mosquitos, and white ants there is not much entomology in the body of the book, but there is an appendix in which are reproduced the descriptions of the new species of butterflies, moths and beetles met with, illustrated by a coloured plate, together with a few descriptions by Mr. Walter Rothschild, apparently published for the first time. The work is well got up, and the illustrations are excellent, but there is no index other than the bare headings of the chapters.

THE BUTTERFLY BOOK, a popular guide to a knowledge of the Butterflies of North America: by W. J. HOLLAND, Ph.D., D.D., LL.D. Small 4to, pp. 382, with 48 plates in colour-photography, and many text illustrations. New York: Doubleday and McClure Co. 1899.

The interest of this excellent book centres in the fact that it probably represents the first occasion on which colour-photography has been used for illustrating Butterflies on a large scale: the result is beyond what we could possibly have anticipated. It is true there is sometimes a lack of brightness, and that the metallic lustre of the *Lycanida*, &c., is wanting, but this is compensated for by absolute accuracy in the markings. We take it that, with but few exceptions, it would be impossible to fail in identifying the species from the figures, and the price is marvellously low, we might say microscopic as compared with the expensive hand-coloured works on North American Butterflies. The 48 plates are crowded with figures, the first six being devoted to larvæ, pupæ, &c. Every North American species (from north of Mexico) is figured, save a few obscure *Lycanida* and *Hesperida*, and we believe it is claimed for 150 of the species that they have never before been delineated in colours, at any rate in America. Dr. Holland's reputation is a guarantee that the text is accurate: the descriptions are concise, and every information is given as to the early stages (when known), localities, &c. The neuration is figured in the text for each genus. The first 74 pages are occupied by generalities, with copious

illustrated instructions for collecting, preserving, &c. The book is printed on good honest unloaded paper, in striking contrast to many recent American works we could name, probably intended to be of more lasting scientific value, but which, if we mistake not, will be utterly ruined when this will show no sign of deterioration. We cordially recommend the work, and believe the impetus it will give to a study of the subject will more than repay the labour bestowed upon it by its self-sacrificing author.

AN INDEX TO THE GENERIC AND TRIVIAL NAMES OF ANIMALS DESCRIBED BY LINNÆUS in the 10th and 12th Editions of his "SYSTEMA NATURÆ:" by CHARLES DAVIES SHERBORN. Pp. viii and 108, 8vo. London: Dulau and Co.; Manchester: J. E. Cornish. 1899.

For several years past a Committee of the British Association has been appointed (the writer of this notice being one of its members) for the purpose of furthering the compilation of an "Index Animalium," with Mr. Sherborn as compiler. At present Mr. Sherborn is mainly occupied with the works published in what we can still call the last century. One result is this very useful alphabetical (as to genera and species) and collated List, published as one of its Handbooks by the Owen's College (Manchester) Museum. It is very clearly printed, and evidently the greatest care has been taken in seeing it through the press. The Introduction commences with an annotated List of the twelve editions of the "Systema Naturæ," several of which, however, were never acknowledged by Linnæus himself. To the systematic zoologist the work is of high value, and will save much trouble. It is scarcely necessary to call attention to the fact that the names appearing in ed. xii, not in ed. x, do not *all* date from ed. xii, inasmuch as many Scandinavian species were first described in the "Fauna Suecica," ed. ii, which intervened between the editions of the "Systema." Mr. Sherborn is an enthusiast in zoological bibliography rather than a systematist: nevertheless, his opinions on the main question in nomenclature are worth quoting; here they are:—

"In spite of the difficulties, and they are many, I am of opinion that a rigid adherence to the law of priority would eventually lead to a great simplification of nomenclature, but the impossibility of determining what an author means when he refers to a genus and species founded by an earlier author, allows one to regard with respect the views of those who think priority tempered with common sense the better method. * * * The question must always be one of personal idiosyncrasy, and finality is practically impossible."

The writer of this signed notice is, after an experience of nearly 40 years, inclined to think "priority tempered with common sense" the better method.—R. MCLACHLAN.

A NATURAL HISTORY OF THE BRITISH LEPIDOPTERA A TEXT-BOOK FOR STUDENTS AND COLLECTORS by J. W. TUTT, F.E.S. Vol. I. 8vo, pp. (6) + 560, Pl. I. London: Swan Sonnenschein and Co. January, 1899.

By the Rt. Hon. LORD WALSHINGHAM, M.A., LL.D., F.R.S., &c.

Mr. Tutt's first volume of the Natural History of British *Lepidoptera* is something more than its title would lead us to expect, and if other volumes should succeed

it, compiled on the same lines and with equal elaboration and attention to details we may expect a fund of information, for collectors as well as students, such as has never before been brought together in so accessible and convenient a form. The work is prefaced by nine chapters devoted to a summary of the researches of other authors on the origin, embryology, larval structure, protective or other variation and classification of this order of insects. After numerous quotations, and more or less comparison of the conclusions arrived at by others, Mr. Tutt appears to accept the "pretty generally" received opinion "that the *Lepidoptera* and *Trichoptera* originated from a common Neuropterous stock" from which same source he thinks the *Diptera* also probably arose, originating quite independently "from a common ancestral base." His second chapter, dealing with the ovum, is a very careful study of the form, pattern and position of the eggs of *Lepidoptera* undertaken with a view to assist the author in his efforts to arrive at some reliable conclusion as to the origin and relationship of the various groups and families, so far as such evidence can enable him to do so. It would seem that he is rather inclined to overrate the importance of this branch of his subject for purposes of classification. There is undoubtedly a resemblance, or uniformity of shape and colour, in the eggs of birds by which an ornithologist might be enabled to guess at certain families, the ducks, the owls, the hawks, or the divers, for instance; in Entomology however we cannot look upon this as a real aid to classification, but rather as mere collateral evidence. The question of the internal or external position of the egg and its consequent passage through an extended and sharply pointed, or an obtuse and less chitinous ovipositor, may surely be taken to account for many variations in the eggs of *Lepidoptera* belonging to the same family or even to the same genus. The author would probably be the first to admit that classification founded simply upon oval characters must necessarily fail to be of taxonomic value. After two chapters on embryology, and parthenogenesis respectively, in which he admits that the *modus operandi* of parthenogenesis in *Lepidoptera* is still as obscure as ever, although he offers the suggestion that the potency of the male element is handed down through many generations, he proceeds to consider, in chapter 5, the external structure of the Lepidopterous larva. This chapter contains an excellent description of the anatomy of larvæ of different types, with copious quotations from the writings of Dyar, Chapman, Scudder, and Packard, and allusions to the views of Fritz Müller, Meldola, Poulton and others. Another chapter is devoted to the internal structure in which the muscular, ganglionic and respiratory systems as well as the nature and functions of the blood are discussed, but he omits in this chapter any reference to the curious chin glands (subsequently referred to under protective and defensive structures on p. 94) which are so noticeable in *Melitæa* and other larvæ of butterflies, as well as in certain groups of the *Noctuidæ*, and which have sometimes been regarded as designed for the lubrication of food rather than for any defensive purpose.

The defensive and protective effect of colour-variation, the prevalence of seasonal dimorphism, and the potential operation of natural selection are elaborately referred to; the views of Wallace, Weismann, Standfuss and others being brought into contribution, with the general result that although the author appears to regard temperature as the external stimulus mainly regulating the range of variation in the *determinants* of the scales, which enables the insect to assume different shades of

colour, he wisely adopts a somewhat guarded attitude and points to the necessity of further experiment and observation "if we are to obtain any real, as apart from theoretical knowledge of the factors underlying variation." We may suggest that in this connection the metallic and iridescent colours due to mechanical effects dependent upon the superficial structure of the scales should not be disregarded. Again in relation to defensive structure he remarks "there can be, we think, little doubt that all the purely defensive structures of insects—hairs, flagella, glands, etc., have been developed in response to the increasing attacks of enemies. That we know very little about the subject is very evident, and workers have here an unlimited field for observation." We trust the *observers* will not neglect to *work*.

Before entering on his ninth chapter, which is devoted to classification, we had hoped to find a description of the imago, perhaps also of the pupa, worked out with no less care than had been devoted to the larva and ovum, but this branch of the subject (equivalent to the part of Hamlet in the play) has been practically omitted. We trust that this is only deferred to a future volume, for Mr. Tutt's methods and treatment are so exhaustive that we should expect to derive much useful information from a carefully studied chapter. Although much has been written by the same authors upon whom Mr. Tutt has drawn very freely (but always with due acknowledgment) for those landmarks which have guided him in the general treatment of his subject, there are many points in the structure of the Lepidopterous imago by no means yet well understood, and of which an accurate appreciation could not fail to be useful to systematists as well as to biologists, e.g., the homologies of the genital segments with those of the generalised arthropod type have yet to be determined and a correct terminology based on a careful comparison of these structures has yet to be supplied.

Before commencing the more useful part of his work, the author devotes one chapter to the classification of the *Lepidoptera* and allowing that his views are governed by the observations of Chapman, Comstock, Dyar, Packard and others, he evolves a system of his own illustrated by a phylogenetic tree which provides much food for contemplation. In this chapter he reverts to the importance of the ovum as indicating "a dichotomous division in Dyar's *Noctuina*, one branch showing relationship with his *Micro-Lepidoptera* through the Cossids, the other through the Pyralids." On this distinction he founds, I, his *Noctuo-Hepialid* stirps; II, his *Geometro-Eriocraniid* stirps, also founding, mainly upon an examination of the eggs and in sympathy with Dyar's views his third section the *Sphingo-Micropterygoid* stirps. Now, without entering with too much elaboration into a discussion of the position of the different families placed upon each of these lines of deviation we will take individual instances and draw attention to the net results. The first series begins with the *Hepialides* includes the *Tortricides* (why not *Tortricida*?) and culminates in the *Papilionides*. His second series beginning with *Eriocrania* includes the *Tineides* (why not *Tineina*?) and culminates in the *Geometrides*. His third series starting from the *Micropterygides* includes *Nepticula* and the *Psychides* (macro- and micro-), and passing through the *Pterophorides* eventually arrives at the *Saturniides* and *Sphingides*.

"We may at once state that each of" the root-families of these stirpes "might equally well be put at the bottom of any stirps"—this is a quotation (*vide* p. 110) and presuming that these root-families have originally branched out from the

common ancestors of the *Lepidoptera* and *Trichoptera* to which they are more nearly allied than other more specialized groups we entirely agree with him, but as the branches of his phylogenetic tree diverge we fail to see the corresponding divergence of the families which flower on the leading shoots, e.g., are the *Tortricides* and *Tineides*, or his two opposite sections of the *Psychides*, more divergent from each other than the ancestral forms from which he derives them? What is the sum of the characters, larval, oval, or imaginal which supports the theory of such divergence? Again, take the *Agdistides* to which Mr. Tutt assigns a branch from the stem of the *Pterophorides*, why should he not with equal justification branch them from the stem of the *Bombycides* or *Sphingides* from the evidence afforded by the tubercular processes on the thoracic and anal somites of the larvæ—characters which appear in more than one European species? It is of course true that the only British species of *Agdistis* has a smooth larva but this is not a diagnostic character in the genus as at present constituted. Why again does he place the *Gelechiides* and the *Hyponomeutides* between the *Orneodides* and the *Pyrilides* (both possessing developed maxillary palpi) the latter by his arrangement far remote from the *Pterophorides* with which Meyrick and Hampson have placed them in close conjunction?

Mr. Tutt says nothing disparaging about Sir George Hampson's work although he distinctly differs from many of his conclusions, drawing attention to the fact that his association of certain important families on the evidence of the basal approximation of vein 5 to 6 (rather than to 4) in the fore-wings would bring together the most specialized forms of his (Tutt's) three original stirpes, of which he himself admits that the roots are interchangeable and the selection arbitrary (*vide* p. 110). Judging from the *Tineidæ* we should not regard the neural character above alluded to as more than a merely recent phase, unreliable for the purpose of founding any important divisions. Mr. Tutt's chapters have left the writer a victim to the reflection, amounting to little less than delirium, that he can scarcely hope to master the intricacies of classification without collecting the larvæ, pupæ and ova of some 200,000 species of exotic *Micro-Lepidoptera*, of which in his ignorance he is vainly attempting to arrange the imagines according to their natural affinities. Up to this point in his book we feel bound to confess that although it gives ample evidence of careful thought, of unlimited industry, and of some power of analysis, there is much that we only partially understand and a good deal that comes under the category of "not proven," but we must add that it is written in no aggressive spirit, and is pervaded rather by a tone of modesty and self-effacement worthy of the truly scientific enquirer, a quality which adds much to its merit.

The second part of the book contains a vast fund of information. The conscientious care with which Mr. Tutt searches out the histories of the various species of *Micropteryx* and *Nepticula*, has provided the student with a perfect compendium of all that has been written on the subject worth reading, and much knowledge possessed by himself and others hitherto unpublished. The full references and synonymy given in all cases, together with the original descriptions (with one single exception*, which we know to have been unattainable in this country) leave no excuse for ignorance or error in any future work undertaken in

* I have now fortunately acquired a copy of J.R. NH. Ges. zu Hannover XIV (1865) containing the description of *Nepticula pyri*, Glitz. which I am thus able to append to this review.—W.

this connection, and we have no hesitation in saying that this is the first instance in which any author has provided his readers with so complete and careful a summary of evidence to support the identification of species in any genus of the *Micro-Lepidoptera*. For this and for the careful redescrptions of each species (including original descriptions of two new to science) it is impossible to praise the author too highly or to express too strongly the thanks of those who study the subject which he has so amply elucidated. For many of them it would have been impossible to refer to the works quoted, scattered as they are through various libraries private and public at home and abroad, and in any case the expenses incurred in so doing would have been greater than the moderate sum necessary to provide them with more than one copy of Mr. Tutt's excellent book.

APPENDIX.

The original description of *Nepticula pyri*, Glitz:—

“Zweiter Nachtrag zu dem Verzeichnisse der bei Hannover vorkommenden Schmetterlinge. Von dem Herrn Klosterrevisor Glitz.”

“*Nepticula pyri*, Glitz n. sp. 1).”

“1) *Nepticula pyri* hat die Grösse von *microtheriella*, ist mithin ausser *Nylandriella* eine der kleinsten Nepticulen; sie steht zwischen *oxyacanthella* und *anomaella*. Gesicht und Schopf rostgelb, Augendeckel weiss, Nackenschöpfe schwarzviolett, Fühler gelblich und kurz, Rückenschild und Hinterleib schwarzviolett, Füsse schwarz mit weissen Hintertarsen.

Die Vorderflügel sind sehr glänzend bis zu zwei Drittheilen grüngolden mit blauvioletten Schuppen untermischt, welche an der Basis und dem Vorderrande am dichtesten stehen. Vor dem letzten Drittheile, welches scharf abgeschnitten ist, ist die Goldfarbe am hellsten. Das letzte Drittheil dunkelblauviolett, Franzen hellgrau. Die Hinterflügel und ihre Franzen sind schwarzgrau.

Die kleine grüne Raupe mit braunem Kopfe und Mundtheilen wurde im August, September und Anfangs October minirend in den Blättern eines wilden Birnbaumes im hiesigen Königlichen Georgengarten gefunden. Die Mine, welche mit einem feinen Gange beginnt, wird in den zwei letzten Drittheilen breit, und lässt die ziemlich breite Kothlinie die Ränder frei.

Der rundliche Cocon ist dunkelrothbraun.

Es existirt jährlich nur eine Generation, welche im Freien wahrscheinlich im Mai fliegt.”

Glitz, JB., NH., Gesell. Hannover XIV. 42 (1865).

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: May 15th, 1899. — Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. A. H. Martineau showed a few insects taken at St. David's, South Wales, on April 22nd this year; he found there a very large colony of *Anthophora pilipes*, accompanied with great numbers of *Melecta armata*; they were in a most inaccessible spot, burrowing in a bank of drift practically out of reach, and although they seemed to be in thousands, he was only able to secure two or three males of each; he also showed *Ammophila hirsuta* and *Nomada succincta* from the same

district. Mr. J. T. Fountain, a number of *Lepidoptera*, all taken this year, including *Saturnia pavonia* (♂) taken at Sutton on April 30th by sémbling, *Selenia illanaria* from Acock's Green, a lot of *Taniocampa*, including *rubricosa* from Marston Green, *Anticlea badiata* from Knowle and Marston Green, and *Anisopteryx ascularia* from Moor Green. Mr. G. T. Bethune-Baker, two drawers full of Palaearctic *Melanargias* and *Erebias*.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
March 23rd, 1899.—Mr. J. W. TUTT, F.E.S., Vice-President, in the Chair.

A communication was read from Mr. T. D. A. Cockerell, of New Mexico, sent with the idea of raising a discussion. After stating the facts that tropical species are, as a rule, much more easily separated than the species of temperate regions, and that holarctic groups were especially polymorphic, he went on to discuss the causes of these phenomena. He noted that owing to conditional changes, such as the various glacial desolations, in the temperate regions, species were ever answering to this environment and being newly formed. In the tropics on the other hand the environment was more stable, and no doubt had been so for an indefinite period, hence the easier definibility of the species in those regions. In the discussion, which ensued, numerous Palaearctic groups of very closely allied species were mentioned, and the necessity of naming the various forms as a matter of convenience for study and reference was generally conceded. Mr. Montgomery read notes on a series of broods of *Pieris napi* reared originally from ova deposited by a female from Enniskillen, compared with bred series from Middlesex, to show the typical dimorphism. The Irish specimens were especially noticeable for the brilliancy of the yellow on the under-sides. A long discussion ensued, and the members present considered that it was most necessary in all experiments of this nature, that every specimen bred should be preserved with its label giving full details. Mr. F. N. Clark exhibited specimens of the mite, *Psoroptes longirostris*, taken from a rabbit, on which it produced a skin affection and suppuration. Mr. Adkin, a wasp's nest of several cells, found in a hand of tobacco from Kentucky. It was made of mud and no doubt the inhabitants were killed during the smoking process over wood fires. Mr. Montgomery, numerous coloured drawings of the eggs and first instar of the larvæ of several species of British butterflies.

April 13th, 1899.—Mr. A. HARRISON, F.L.S., President, in the Chair.

Mr. Crabtree, F.E.S., of Levenshulme, Manchester, was elected a Member.

The evening was devoted to Microscopy under the direction of Mr. Scourfield, F.R.M.S., who took as his subject, "British Freshwater Entomostraca," illustrating his remarks with numerous diagrams and blackboard drawings, together with a varied series of specimens of the group, shown under the microscopes of several Members and friends. The Society were much indebted to the kindness of Mr. Scourfield for a very pleasant evening.

April 27th, 1899.—The President in the Chair.

Mr. Smith, of Tresco Road, Peckham, was elected a Member.

Mr. Drury, F.R.H.S., presented to the Society's collections a large number of the species of the smaller *Lepidoptera*. Mr. Ashdown exhibited several specimens of the earwig, *Forficula auricularia*, showing considerable variation in the shape

and size of the forceps; Mr. Burr said that the example with unusually small forceps was a very rare aberration. Mr. Harrison, photographs of *Morpho epistrophis* taken at short intervals after emergence until the wings were fully expanded. Mr. Edwards, a male and four forms of the female of the polymorphic *Papilio Memnon*, a very fine specimen of *P. Segonax*, with the closely allied species *P. Ulysses*. Dr. Chapman, several species of *Psychids* and their cases, *Lycæna Arion*, *Setinia aurita* with strong black markings, *Gnophos variegata*, *Acidalia marginipunctaria*, &c., taken the first week in April at Locarno. Mr. Enock, a specimen of the locust, *Acridium tartaricum (egyptiacum)*, taken March 10th, 1898, at Wembley Park. Mr. Malcolm Burr then read a paper, entitled, "*Orthoptera*, with special reference to British species." In a chatty manner he discussed the bibliography of the group, and remarked on the present backward state of our knowledge of it; he referred to the present workers and the work they were doing. The various sections and genera in the group were distinguished at some length, and where possible examples were given from the English fauna. After giving many interesting personal observations made in various parts of Europe, he pointed out particularly the directions in which Members could aid in the fuller investigation of this neglected Order.

May 11th, 1899.—The President in the Chair.

Mr. J. A. Harrison, of Forest Gate, was elected a Member.

Mr. Turner exhibited a small printing apparatus, which he had received from Mr. J. J. F. X. King, of Glasgow, and which was admirably sufficient to print all ordinary locality labels. Mr. Edwards, a number of pupæ of *Hepialus lupulinus* from Blackheath. Mr. West, specimens of the aquatic Hemipteron, *Plæa minutissima*, from Blackheath. Mr. Tutt, a number of lantern slides to illustrate the subject of "Mimicry," which he discussed from various points of view: among the subjects illustrated and discussed were the European *Mantis religiosa*, *Euchloë cardamines*, *Amphydasis betularia*, *Kallima Inachis*, *Limnas Chrysippus* and its mimic *Hypolimnna misippus*, a *Heliconius* and its Pierid mimic, *Papilio Merope* and its polymorphic females which mimic forms of *Danais*, &c.

May 25th, 1899.—The President in the Chair.

Mr. Ashdown exhibited specimens of the two sexes of the Coleopteron, *Osphya bipunctata* taken in May in Huntingdonshire, together with the two forms of the male. Mr. Lucas reported a list of nine species of dragon-fly which he had observed so far this year; the specimens, however, were few in number. Mr. West, a specimen of the rare Hemipteron, *Drymus pilicornis*, obtained from moss at Box Hill. Mr. Edwards, a considerable number of species of *Cicadida*, chiefly from Borneo and India, and read notes on the group.—H. J. TURNER, Hon. Sec.

ENTOMOLOGICAL SOCIETY OF LONDON: May 3rd, 1899.—Mr. R. McLACHLAN, F.R.S., in the Chair.

Dr. A. L. Bennett exhibited various insects which he had collected in the French Congo. They included a species of *Mantida* remarkable for its very striking resemblance in coloration to a piece of bark. Mr. F. Enock, a living specimen of *Nepa cinerea* infested with a number of minute red *Acari* on the ventral surface of the abdomen. He also showed eggs of *Nepa* and *Notonecta* lying *in situ* in decaying

leaf-stalks of *Alisma*, and described the mode of oviposition as observed by himself in both of these genera. Likewise, a living example of the remarkable aquatic Hymenopteron—*Prestwichia aquatica*, Lubbock, and said it was one of a brood of nine, including 8 ♀♀ and 1 ♂, that issued on May 1st from a single egg of *Colymbetes* found on September 5th, 1898. Mr. Merrifield, some specimens of *Hemaris bombyliiformis*, Esp., with the scales still covering the central portions of the wings. He said these scales, which are present immediately after the emergence of the insect but soon become detached, may be rendered adherent by allowing a very weak solution of indiarubber in benzoline to run over the wings. Mr. C. H. Dolby-Tyler communicated a paper on "The development of *Ceroplastes roseatus*, Townes. and Okill."

June 7th, 1899.—Mr. G. H. VERRALL, President, in the Chair.

Mr. Edgar Greenwood, of Frith Knowl, Elstree, Herts, was elected a Fellow of the Society.

Mr. J. J. Walker exhibited, on behalf of Mr. G. F. Mathew, R.N., a number of interesting *Lepidoptera*, chiefly from the Mediterranean region, and including amongst others the following: examples of *Thais polyxena*, Schiff., var. *ochracea*, Staud., having an unusually deep and rich colour, bred from larvæ found at Platæa, Greece; male and female of *Thestor ballus*, Hb., from Alexandria, taken on Jan. 23rd, 1898, the male remarkable in being largely marked with orange on the upper-side of the front wings; unusually large specimens of *Lycæna Baton*, Berg., from Vigo, N. Spain; and a singular aberration, from Corfu, of *Melitæa Didyma*, Ochs., with central band of black spots very strongly marked on both wings, the other spots being obsolete and the ground colour pale fulvous. Colonel Yerbury, the pupa-case of a Hymenopterous insect which appeared to be parasitic in the weevil *Barynotus mærens*, Fab. Dr. Chapman showed a large Ant-Lion larva from Cannes, probably that of *Acanthaclysis occitanica*; it was one of those which do not make pit-falls. Mr. E. E. Green exhibited a teratomorphic specimen of a Zygonid moth, *Chalcosia venosa*, Walk., which he had found at rest on a leaf, at Udagama, Ceylon, in October, 1898. In this specimen four wings were present on the left side, the hindmost being almost as fully developed as the normal hind-wing on the right side, while the other three appeared to be attached to the mesothorax. He also showed larvæ and pupæ of insects in air-tight glass tubes, in which a little cotton wool, sprinkled with formalin, had been placed. The specimens, which had been thus preserved for nearly two years, had lost little of their original colour or brilliancy. Mr. Gahan, pupa-cases of a Longicorn beetle, *Plocoderus obesus*, Gah., which were remarkable in being composed almost wholly of carbonate of lime. It was not known how the pupa-cases were fabricated, but presumably the larvæ must possess lime-secreting glands. Mr. R. McLachlan, F.R.S., read a paper on "A second Asiatic species of *Corydalis*," and exhibited the male type of the species described, which he proposed to name *Corydalis orientalis*. He said the first Asiatic species of *Corydalis* was described and figured by Prof. Wood-Mason in 1884, the genus up to that time having been considered to be peculiarly American. Mr. H. J. Elwes, F.R.S., communicated a paper "On the *Lepidoptera* of the Altai Mountains;" and the Rev. A. E. Eaton a paper, entitled, "An Annotated List of the *Ephemerida* of New Zealand."—J. J. WALKER and C. J. GAHAN, *Hon. Secs.*

A DESCRIPTIVE LIST OF THE BRITISH *CORDYLURIDÆ*.

BY R. H. MEADE, F.R.C.S.

My endeavour in this list will be to describe as concisely and clearly as possible the characters of some of the higher Acalypterate *Muscidæ*, so that a student may determine the names of the species which he may find with tolerable accuracy. I shall not attempt to divide this family into the numerous groups, sub-families, and genera which have recently been established by Becker in his paper on the *Scatomyzidæ*,* as that would defeat my object by making the subject complicated and difficult; but I shall pursue with a few modifications the arrangement adopted by Schiner in the "*Fauna austriaca*," and followed by Van der Wulp and Meijere in their lately published (1898) list of the *Diptera* of the Netherlands.

The *Cordyluridæ*, Mcq., or *Scatomyzidæ*, Flin., have small but well marked calyptra or scales, though they are included among the *Acalypterati* (Haliday). They differ from the *Anthomyidæ*, to which they are related, and which they follow in the scale of *Diptera*, by having the eyes (which are always bare and widely separated in both sexes) shorter and rounder, the oral setæ† mostly weaker, the body more elongated and narrower, and the wings shorter than in that family.

This group may be divided into two sub-families, viz., *Cordylurinae* and *Scatophaginae*, and sub-divided into a number of genera (some very anomalous), which may be thus tabulated:—

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|----|--|--------------------------|
| 1 | (2) Eyes long, abdomen very short | 1. LEPTOPA, Ztt. |
| 2 | (1) Eyes short and sub-round, abdomen prolonged. | |
| 3 | (21) Abdomen long, narrow, and subcylindrical in the male, with the apex incurved | (<i>Cordylurinae</i>). |
| 4 | (19) Proboscis mostly short, with blunt lobes. | |
| 5 | (8) Palpi with ends dilated (club or ladle shaped). | |
| 6 | (7) Head with prominent eyes and nude forehead | 6. HYDROMYZA, Flin. |
| 7 | (6) Eyes unprojecting, frontalia bordered with bristles for the whole length... | 7. TRICHOPALPUS, Rnd. |
| 8 | (5) Palpi filiform or subfiliform. | |
| 9 | (10) Male abdomen with long lateral tufts of hair | 5. POGONOTA, Ztt. |
| 10 | (9) Abdomen untufted. | |
| 11 | (16) Arista plumose. | |
| 12 | (13) Fore femora armed with long spines | 3. NOBELLIA, Dev. |
| 13 | (12) Femora without long spines. | |
| 14 | (15) Antennæ short | 2. CORDYLURA, Flin. |
| 15 | (14) Antennæ very long | 4. CNEMOPOGON, Rnd. |

* Berliner Ent. Zeit., Bd. xxxix (1894).

† I use the term oral setæ instead of that of *vibrissæ*, because the latter name has been given by Zetterstedt to the facial setæ.

- 6 (5) Tarsi plain.
 7 (8) Scutellum with two setæ 2. *umbrosa*, Lw.
 8 (7) Scutellum with four setæ 3. *pudica*, Mgn.
 9 (2) Legs black.
 10 (11) Legs quite black, scutellum with four setæ 6. *ciliata*, Mgn.
 11 (10) Legs with fore knees red, scutellum with two setæ 7. *biseta*, Lw.
 12 (1) Palpi pale 8. *albipes*, Flin.

Sp. 1.—*C. PUBERA*, L.

Head subglobose, occiput thick; eyes small, face prolonged; frontal stripe red in front, grey behind; antennæ dark brown, with long haired arista; palpi black, with one or two long apical setæ; proboscis black; thorax black, dusted with grey tomentum, and marked with three white stripes; the sides as well as coxæ and metanotum white; scutellum black, with four long setæ; wings flavescent, with third and fourth long veins parallel; abdomen black, with thick incurved apex in the male, and large complicated hypopygium, lanceolate and pointed in the female; halteres yellow; legs with femora black, and tibiæ and tarsi testaceous; each joint of the latter being marked on the under-side with a bright black spot, more distinct in the male than female. Length, 8—9 mm. Common.

Sp. 2.—*C. UMBROSA*, Lw.

Very similar to the last; palpi and antennæ black; arista long haired; tibiæ and tarsi testaceous, the latter unspotted; scutellum black, with only two long setæ; wings with a little nigrescence or nebulosity upon the extremities, not sharply defined, but extending from the termination of the second long vein, to the end of the fourth. This species may at once be known from *C. pubera* by the unspotted tarsi, the two setæ on the scutellum, and the dark markings on the ends of the wings. Length, 7—8 mm. Not common, local.

Sp. 3.—*C. PUDICA*, Mgn.

geniculata, Ztt.

This species has been sometimes confounded with one or other of the preceding, though it is very distinct. Meigen's description is so clear (though short) that I will quote it. He says, "it resembles *C. pubera*, but is always smaller; the legs are testaceous and bristly; the femora are brown with red ends, and ciliated beneath with grey hairs; the tarsi are without black spots." To this may be added, the scutellum has four setæ as in *C. pubera*, and the arista is more shortly and thickly haired than in either of the above species. Length, 7—8 mm. Not common.

Sp. 4.—*C. RUFIPES*, Mgn.

Thorax shining black, with a white spot in front; abdomen black, with a brown tinge; legs entirely rufous, with the exception of black spots upon the tarsal joints; wings uncoloured. This fly was sent by Dr. Leach to Meigen, and, according to Curtis, is in the British Museum. Length, 6 mm.

Sp. 5.—*C. RUFIMANA*, Mgn.

Shining black; frontalia white, with forehead red; face white; antennæ and

palpi black; thorax with a short white stripe in front; wings tinged with brown; legs with fore tibiae and tarsi red, and all other parts black. Length, 6 mm. I found this fly among some specimens which had been collected by the late Mr. F. Walker.

Sp. 6.—*C. CILIATA*, Mgn.

Very similar to *C. pubera*, but has the legs quite black. Thorax shining black, with short white median stripe in front; scutellum black, with four setae; palpi and antennae black; arista long haired; wings yellowish; legs ciliated in the male with long pale hairs upon the fore femora and tibiae, and also upon the middle tibiae.

Length, 6—8 mm. Rare.

Sp. 7.—*C. BISETA*, Lw.

This small, well marked species is quite black, with the exception of the fore knees, which are rufous, and the fore tarsi, which are reddish-yellow on their under-surfaces, but black above; the head has the frontal stripe quite black, bordered with white; face white; antennae black, with short but plumose arista; palpi and proboscis black; oral setae two only; thorax dull black, with three small white, sub-distinct, spots in front; scutellum black, with two very long setae near the apex; halteres red; abdomen in male narrow and flattened, with projecting, but not incurved, shining black apex, and very large prominent hypopygium beneath; abdomen in female lanceolate and pointed; wings yellowish-brown; legs armed with long scattered bristles. Length, 5—6 mm.

This species, previously unrecorded as British, was taken by Col. Yerbury in Herefordshire, where it is not uncommon; and both sexes were kindly sent to me by Dr. John H. Wood, of Tarrington, near Ledbury.

Sp. 8.—*C. ALBIPES*, Flin.

bilineata (var.), Mgn.

Head subglobose; frontalia and face pale yellow, the former with a black ocellar triangle on the vertex; antennae short (with long haired arista), light yellow in colour, together with the palpi and proboscis; oral setae with one long bristle on each side; thorax with upper surface black and shining, and the sides and under-surface yellowish-white; scutellum black, with four setae, and sometimes marked with a median white line; halteres white; abdomen glistening black and hairy; hypopygium partly white; wings flavescent; legs (including the coxae) quite pale. This species varies considerably in colour, being sometimes almost entirely pale; and at others having the thorax yellow, marked by two black stripes, when it becomes the *C. bilineata*, Mgn. Length, 4—6 mm. Not uncommon.

GEN. III.—*NORELLIA*, Dsv.

Gen. ch.—These closely resemble those in *Cordylura*; the only important distinction being the armature of the fore femora with a number of long and strong spines in the former genus. The arista is also generally more shortly haired, and sometimes bare, and the palpi are without apical setae.

- 1 (6) Arista plumose.
 2 (3) Thorax fulvous 1. *spinimana*, Fln.
 3 (2) Thorax piceous.
 4 (5) Shoulder points and scutellum yellow 2. *flavicauda*, Mgn.
 5 (4) Shoulder points and scutellum black 3. *neriosa*, Mgn.
 6 (1) Arista bare 4. *liturata*, Mgn.

Sp. 1.—*N. SPINIMANA*, Fln.

Head with frontal space bright red ; face glistening white ; antennæ, palpi, and proboscis yellow ; arista rather shortly but thickly haired ; thorax reddish-yellow, marked with two black stripes, and having whitish reflections ; scutellum yellow ; abdomen dark brown, with the last ring and the hypopygium tawny ; wings tinged with brown, and having dark veins ; legs, together with the coxæ, yellow ; the ends of the femora being sometimes slightly blackened ; fore femora armed with two rows of long spines. Female very similar to the male, except by the form of the abdomen. Length, 7—8 mm. Common.

Sp. 2.—*N. FLAVICAUDA*, Mgn.

This species closely resembles the last ; the forehead being red, and the antennæ, palpi, and proboscis yellow ; the thorax, however, is of a dark piceous brown colour upon the dorsum, instead of being yellow and striped ; the sides and hinder part being rufous ; the scutellum and shoulder points are red ; the wings have the third and fourth long veins quite parallel ; the legs are similar in armature to those of *N. spinimana*. Length, 7—8 mm. Not uncommon.

Sp. 3.—*N. NERVOSA*, Mgn.

Antennæ, palpi and proboscis yellow ; arista rather shortly but thickly haired ; thorax dark grey as in *N. flavicauda*, but without any rufous tinge ; shoulder points and scutellum black ; abdomen dark bluish-grey, with red apex ; wings flavescent, with the third and fourth long veins slightly divergent, and darkened towards the apices ; legs yellow. Length 7—8 mm. Rare.

Sp. 4.—*N. LITURATA*, Mgn.

This species differs from all the others by having the arista bare. The head has frontal space yellow in front and dark grey behind ; face glistening white ; antennæ, palpi and proboscis ochreous ; thorax black covered with grey tomentum ; shoulder points and scutellum grey ; abdomen shining black ; wings yellowish-grey, darker towards the upper margin and apex ; legs yellow, armed with spines as in the other species. Length 6 mm. Rare.

Mr. Verrall, in the third part of his List of British *Diptera*, introduces the three following additional species of *Norellia*. I will therefore briefly describe them.

N. ARMIPES, Mgn.

Antennæ yellow, third joint marked with brown on the upper surface ; thorax

brown, with two dark lines; abdomen reddish-brown, with the anal segments of the male yellow; wings flavescent, with yellow veins; legs pale yellow.

Length, 8 mm.

N. STRIOLATA, Mgn.

Very similar to *N. armipes*, but has the thorax dark grey and unstriped; and the abdomen yellowish-grey, with the anal segments black. Length, 9—10 mm.

N. SPINIPES, Mgn.

This long, slender species is aberrant, and has been placed by Rondani and Becker in a new genus named *Achantholeta*. It has the antennæ, palpi and proboscis yellow; arista sub-nude; thorax yellow, with black stripes; abdomen shining black above, with sides and anal segments yellow; wings with a large dark spot upon the apex. Length, 8 mm.

GEN. IV.—CNEMOPOGON, Rnd.

Gen. ch.—Head subglobose; antennæ prolonged, the third joint three or four times the length of the second; arista thickened, subplumose, with second joint, elongated and mostly geniculated with the third; palpi filiform, without apical setæ; abdomen setose; legs hairy with femora a little thickened.

Sp. 1.—*C. APICALIS*, Wdm.

Antennæ black; frontal space with dull black stripe and white margins; face and palpi white; proboscis black; thorax bright black, indistinctly striped; shoulder points white; sides pale grey; scutellum black; abdomen black, long, narrow, with apex clubbed in the male, segments with white edges and numerous hairs; wings grey; legs yellow with black tarsi; fore femora with a black stripe on the side, and ends of the middle and hind femora black; the femora and tibiæ are also ciliated beneath with long hairs, especially on the hind legs. Female similar to male, but the abdomen is lanceolate, and without white incisions. Length 6—7 mm. Rare.

GEN.—V. POGONATA, Zh.

Gen. ch.—General form and habit those of *Cordylura*; head small and subglobose; arista pubescent; oral setæ large and numerous; palpi somewhat clavate and without apical setæ; abdomen of male long, subcylindrical, gradually thickened towards the end, which is pointed, incurved, and furnished beneath with a large complicated hypopygium; from the sides of which large tufts of hair spread upwards and forwards; wings with the first posterior cell divided by two extra cross veins placed at about equal distances between the little cross vein, and the extremity of the wing; abdomen and wings in the female without peculiar features.

Sp. 1.—*P. HIRCUS*, Ztt.

A dark reddish grey-fly; frontalia red in front, grey behind; antennæ brown, with a rufous middle; palpi whitish; wings yellow with veins (especially hinder ones) dark and thick. Female resembles male in colour and has the abdomen lanceolate and pointed, and wings with hinder veins nigrescent. Length 6—7 mm. Rare.

GEN. VI.—*HYDROMYZA*, Fln.

Gen. ch.—Head wide; eyes ovoid and projecting, much shorter than the face; cheeks and chin large, and bare of bristles; frontal space wide, and devoid of setæ on the front half; antennæ short; arista bare and short; epistome rather prominent and nude; oral setæ very small; palpi without setæ, either club or ladle shaped; proboscis thick and short; thorax rather flat; abdomen flattened or narrow with small oval appendages.

- (1) Abdomen rather wide and flat, palpi clavate 1. *livens*, F.
 (2) Abdomen long and narrow, palpi with ends orbicular ... 2. *Fallenii*, Schiner.

Sp. 1.—*H. LIVENS*, F.

Colour schistaceous; frontal space black behind, and bordered by the usual bristles; yellow in front, where it is without lateral setæ; face white; antennæ black; palpi yellow, and clavate; proboscis black; oral setæ two and very small; thorax dull slate coloured with subdistinct stripes and lighter sides; scutellum black with four setæ; halteres yellow; abdomen blue-black, dusted with grey tomentum; apex slightly clubbed in the male; wings dark grey with black veins; legs with femora grey, and knees, tibiæ and tarsi testaceous. Female very similar to male. Length 6—7 mm. Not common, found in aquatic places.

Sp. 2.—*H. FALLENII*, Schiner.*Hydromyzina*?, Fln., Ztt.

This species differs so much from the former that it has been placed in a different genus by Rondani and Becker, named *Spathiophora*. The colour is grey instead of slate colour; the palpi have the ends spoon or ladle shaped instead of clavate, and the abdomen is long and narrow instead of sub-ovoid and flattened. The head has the forehead nude, antennæ short, with third joint pointed, and partly or wholly rufous; palpi white, with ends dilated and smooth; oral setæ of moderate size; abdomen long, narrow, with small hypopygium; wings with third and fourth long veins divergent; legs with distal halves and sometimes the bases of the femora red, as well as the tibiæ and tarsi. Length 5—6 mm. Rare.

GEN. VII.—*TRICHOPALPUS*, Rnd.*Hydromyza*, Schiner.

Gen. ch.—Head subglobose; eyes unprojecting, long and oval, covering the sides of the head, so that the cheeks and chin are short;

frontal space bordered with bristles along its whole length; antennæ of moderate length, with bare arista; epistome flat, with two or three oral setæ on each side; palpi with ends clavate, and armed with one or two small setæ; abdomen much as in *Hydromyza*.

Sp. 1.—T. FRATERNUS, Mgn.

Frontalia black, bordered with white lines, and bright red in front; antennæ black with a light red mark across the middle upon the base of the third joint; palpi white, clavate with a few apical setæ; proboscis black; thorax black and glabrous, partially covered with yellow-grey tomentum; scutellum black with four setæ; abdomen dark yellowish-grey, immaculate, sub-lanceolate in form with small hypopygium; wings grey; legs with coxæ and greater part of femora nigrescent, and tibiæ and tarsi testaceous. Length 4–5 mm. Rare, but widely distributed.

GEN. VIII.—CLEIGASTRA, Mcq.

Clidogastra, Verr., Becker.

Gen. ch.—Head sub-globose; face rather short; antennæ variable in length; arista pubescent or bare; oral setæ mostly few; palpi filiform; scutellum with two or four setæ; wings of moderate length; legs without peculiar armature.

This genus, or rather group, contains a good many species which differ considerably from each other, and have therefore been separated by Becker, and placed in a number of new genera or sub-genera; the points of distinction between them are, however, mostly so trivial that I shall (with two exceptions) leave the British species together; noting in the description of each those points of difference which led to their separation.

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| 1 | (6) | Antennæ black. | |
| 2 | (3) | Palpi black..... | 1. <i>nigrita</i> , Fln. |
| 3 | (2) | Palpi pale. | |
| 4 | (5) | Femora black or grey | 2. <i>obscura</i> , Fln. |
| 5 | (4) | Femora rufous or yellow. | |
| 6 | (7) | Oral setæ two only; antennæ with third joint black | 3. <i>tarsæa</i> , Fln. |
| 7(6) | (1) | Oral setæ several in number; antennæ quite pale | 4. <i>dorsata</i> , Ztt. |
| 8 | (5) | Hind femora with black apices. | |
| 9 | (10) | Body bright black | 5. <i>vittata</i> , Mgn. |
| 10 | (9) | Body grey..... | 6. <i>punctipes</i> , Mgn. |

Sp. 1.—C. NIGRITA, Fln.

This slender shining black species has the frontal space narrow, yellow in front, and black at the vertex; face short, yellow, with white reflections; palpi small and black, without apical setæ; antennæ short, only reaching to middle of face, black, with basal joints grey or rufous; arista distinctly pubescent, and thickened at the base; proboscis black; thorax with scutellum shining black, the latter with two

long setæ; halteres yellow; abdomen bright black, sub-cylindrical, with incurved apex; wings grey, with third and fourth long veins bent, but parallel; legs black, with tibiae and tarsi rufous; tibiae armed at the apices with several spines.

Length, 3—4 mm. Rare.

This is the only British species that is typical of the restricted genus *Clidogastra* of Becker.

Sp. 2.—C. OBSCURA, Fln.

This species is aberrant; Becker places it among the *Scatophaginæ*. It is grey, and more or less covered with pale grey hairs; the head is round; frontal space black behind and red in front; antennæ rather long, nearly reaching the epistome, black, with grey or rufous base; arista bare; palpi small and pale, with some small setæ at the apices; proboscis black and straight; thorax grey, with two sub-distinct stripes; scutellum grey, with four bristles; abdomen grey, ciliated with pale hairs; wings light brown; legs grey and hairy, but with few spines; tibiae and tarsi yellow. Length, 3—4 mm. Rare.

Sp. 3.—C. TARSEA, Fln.

This little yellow fly is furnished with few hairs or bristles; the head is round; the face short, and with frontalia yellow; antennæ short and black, with basal joints yellow; arista sub-nude; proboscis yellow, with black lobes; oral setæ two only; palpi filiform, white, without apical setæ; scutellum with four bristles; thorax and abdomen bright reddish-yellow, the latter rather short and narrow in the male with small hypopygium, and lanceolate and pointed in the female; wings clear; legs yellow, with black tarsi. Length, 4 mm. Not common, rather local.

Sp. 4.—C. DORSATA, Ztt.

Very similar to the last species. Head yellow; cheeks and chin covered with white tomentum; antennæ with all joints pale; arista slender, dark, with slightly thickened base; oral setæ of good size, and several in number; palpi and proboscis yellow; thorax yellow, with two or four sub-distinct narrow stripes; scutellum black, with a central yellow stripe; abdomen of male with dorsum black or grey, and sides rufous; wings with yellow veins; legs bright yellow, with tarsi slightly grey. The female has the abdomen yellow. Length, 4 mm. Rare.

I have only seen one male, which was captured by Mr. Dale at Glanvilles Wootton. Becker places this, together with *C. tarsea*, Fln., in the sub-genus *Gimnomera*, Rnd.

Sp. 5.—C. VITTATA, Mgn.

This species closely resembles *Cordylura albipes*, and really ought to be placed in the same genus; the only point of distinction being that the arista is pubescent instead of plumose. The head has the frontal space rather narrow, black behind and yellow in front; antennæ and palpi pale; proboscis yellow; thorax shining black, with yellow sides; abdomen bright black, sub-cylindrical and narrow in the male, hairy with small apex; wings clear; legs yellow, with brown tarsi and black points to the hind knees. The female has the abdomen lanceolate, and the third antennal joint sometimes black. Length, 4 mm. Rare.

(To be continued).

NOTES ON THE LIFE-HISTORY OF *PHALONIA VECTISANA*,
WESTW., WITH DESCRIPTIONS OF THE LARVA AND PUPA.

BY EUSTACE R. BANKES, M.A., F.E.S.

Having failed to find any reliable published information about the life-history of *Eupæcilia vectisana*, or any descriptions of the larva or pupa, I have drawn up the following notes in the hope that they may be of use. The description of the larva was made on September 16th last from specimens, about full-fed, selected out of a bountiful supply which Mr. W. H. B. Fletcher had very kindly collected for me in the saltmarshes at Shoreham, Sussex, on September 12th.

LARVA.

Length, 8·5 mm. *Greatest breadth*, 1·6 mm.

Head polished, brownish-amber, much narrower than the prothoracic segment; upper mouth-parts dark crimsonish; ocelli distinct, black, polished. *Prothoracic plate* polished, pale greenish-amber, inconspicuously divided across the centre by a pale apple-green line. The *thoracic* and *abdominal segments* viewed together form a mass which is stout in the middle and tapers somewhat towards the head and gradually towards the anal extremity; in colour they are pale apple-green, lightly tinged with pink over the dorsal and subdorsal regions; skin smooth and shining. The pulsating dorsal vessel shows through the skin as a darker dorsal line, and in male larvæ the embryo *testes* show through the back of the fifth abdominal segment as a dark blotch. *Warts* extremely small and inconspicuous, black, polished. *Anal plate* polished, pale greenish-amber, with some rather long bristles springing from it. *Bristles* and *hairs* pale, but mostly very short and inconspicuous. *Ventral surface*, and prolegs, pale apple-green. *Legs* polished, very pale amber.

About a dozen larvæ, varying in size, though apparently all in their last skin, were extracted from their burrows, but they did not show any marked differences from one another. I only succeeded in finding one quite small larva: it measured 4·5 mm. in length, and had the head and plates decidedly browner than those described above, and the thoracic and abdominal segments were dirty ochreous, instead of apple-green.

The larva enters one of the shoots of its food-plant, *Triglochin maritimum*, either a few inches above, or only just above, the crown of the plant, and works its way downward, eating out the pith of the shoot, and sometimes burrowing into the crown itself. It moves readily from one shoot to another, and its presence may be detected, though not without close scrutiny, by the yellow appearance of the infected shoot, and often by the pale straw-coloured frass, of which some of the fine pellets are generally visible outside the burrow. When full-fed some of the larvæ gnawed their way from above into the upper broken ends of the dead flower-stems of their food-plant,

their presence being betrayed by the pale extruded frass, and spun their cocoons inside the stems, whilst others spun up in the angle where the muslin cover touched the rim of the flower pot: a few, though very few, cocoons were spun on other parts of the muslin, or of the sides of the flower pot. The larvæ, which, even when extracted from their burrows, are sluggish and move but slowly, hibernate full-fed. Some of them pupated in their cocoons formed in the autumn inside the old flower stems, but many, in confinement, left their winter quarters in the spring and were engaged, about the beginning of April, in spinning fresh cocoons, the large majority of which were clustered together in one spot, and as close as possible to the angle already referred to. The larvæ were unexpectedly, and no doubt exceptionally, late in pupating, and this was probably due partly to the backwardness of the season, and partly to the flower pot containing them having been kept in very cool and shady places until about the latter half of May, when it was transferred to a flower bed and exposed to the sunshine. On May 22nd I failed to find anything but larvæ still unchanged, but on June 4th many cocoons contained pupæ, nearly all of which, however, had unfortunately died, owing, presumably, to the combination of too great heat and too little moisture.

PUPA.

The following description of the pupa, which gradually becomes darker in colour as the time of emergence approaches, was made on June 4th last from a specimen which had evidently only assumed this state a short time previously;—

Length, 5 mm. *Greatest breadth*, 1.5 mm.

Short and stout, tapering gradually towards the anal extremity. Segmental divisions clearly defined. Skin smooth, with no noticeable hairs. *Head and thoracic segments* smooth, polished, dark orange-brown. *Eye-cases* prominent, the eyes visible as small dark spots. *Antennal- and leg-cases* with well-defined margins, smooth, polished, pale brownish-ochreous, the former being a little shorter than the wing-cases. *Wing-cases* smooth, polished, pale brownish-ochreous, reaching to the middle of the fourth abdominal segment, the ends of the posterior tarsal cases projecting between and just beyond the ends of the wing-cases, viz., to the end of the fourth abdominal segment. *Abdominal segments* comparatively dull and unpolished, except near the anal extremity, brownish-ochreous above, more ochreous beneath. Along the anterior margin of each segment dorsally is a conspicuous tawny-brown band, in which stands a raised keel: just behind the keel is a row of minute raised spikelets, and there is another similar parallel row of still smaller spikelets just behind the middle of the segment. The rows of spikelets and the keel terminate on each side shortly above the spiracles. *Anal extremity* with two somewhat recurved, strong, very dark brown spikelets dorsally, and two rather similar, but

smaller, ones ventrally, besides a few stiff ochreous bristles. The *free* abdominal segments in the pupa described, which was doubtless a male, were the 4th, 5th, and 6th.

The cocoon, which is of remarkable length as compared with the size of the pupa, measures about 9—10 mm. long, by 2 mm. wide, and about 2 mm. high: it is narrowly elliptical in shape, rounded above, highest in the middle, and gradually sloping down at each end. Externally the surface is rough, dirty buff in colour, but if the cocoon is cut open, it is seen to be smooth, polished, and whitish, internally. The cocoon is extremely tough, and probably water-tight, so as to protect the larva and pupa from any risk of being drowned by high tides.

The moths, ten in number, emerged June 11th to 17th, between 9 and 11 a.m. as a rule, and showed great variation from the nearly unicolorous non-silvery form to the form with a bright silvery ground and very strongly defined dark fascia and markings, which has been erroneously supposed to be confined, in Britain, to the "Fen" districts. There must, I think, be at least two broods during the season, for the moths abound in our south-coast saltmarshes in May, June, July, and August.

Mr. W. H. B. Fletcher, who bred a few imagines in 1886 from larvæ found at Shoreham, Sussex, was, to the best of my belief, the first to discover the food-plant and larva of this species, but the suggestion that *Triglochin maritimum* might be the food-plant was made to him by Mr. W. Warren, who was aware that, as stated by Mr. C. G. Barrett in Ent. Mo. Mag., xi, 193 (1875), the insect in Germany occurred in marshy meadows among *Triglochin palustre*. *Vectisana*, though so abundant in many of our saltmarshes, has been found in very few inland localities in this country: I have specimens taken by Mr. W. Farren in Wicken Fen, and by Dr. H. H. Corbett in a marsh at Doncaster, and have no doubt that in its inland haunts the larva feeds on *Triglochin palustre*, which I believe occurs in Wicken Fen, and certainly grows in plenty in the Doncaster locality for the moth.

Meyrick, HB. Br. Lep., 549 (1895), says of *vectisana*—"Larva in flower-heads of *Plantago maritima*," but I do not think that any particle of evidence can be produced in support of this statement, which perhaps embodies some old entomological myth, and is, we believe, certainly erroneous.

The Close, Salisbury :

July 12th, 1899.

OBSERVATIONS ON *ASPIDIOTUS LATANIÆ*, SIGN.

BY E. ERNEST GREEN, F.E.S.

By courtesy of the authorities of the Vienna Museum, I have recently had the opportunity of examining types of Signoret's *Aspidiotus lataniæ*.

Since the date of Dr. Signoret's classical "Essai sur les Cochenilles," so many species of *Coccidæ*—and more particularly of the genus *Aspidiotus*—have been added to our lists, that descriptions and figures which then sufficed for the discrimination of the several species are now often quite inadequate. Such is certainly the case with Signoret's description of *lataniæ*, which would equally well apply to at least half a dozen perfectly distinct species.

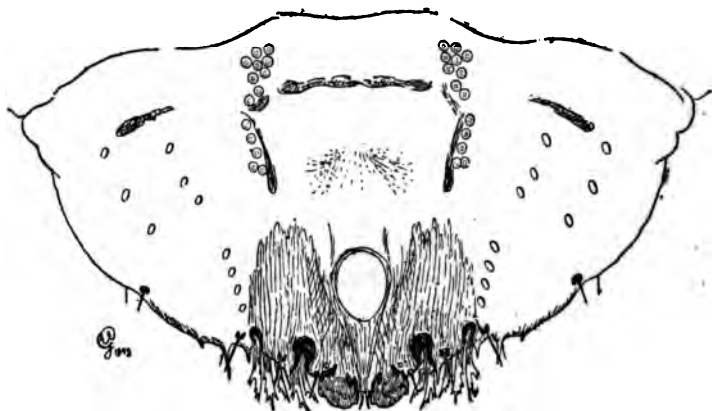
In Part I of "The Coccidæ of Ceylon" (plate viii), I have figured as *lataniæ* an *Aspidiotus* which I had previously described under the name of *transparens*, Green. I was chiefly misled in my later determination by Signoret's insistence upon the conspicuous tubular spinneret ducts, which are particularly prominent in my *transparens*. An examination of Signoret's type, however, shows me that my Ceylonese species is quite distinct, and that it belongs to a different section of the genus. It must, therefore, resume its earlier name.

The accompanying figure represents the pygidium of *Asp. lataniæ* drawn from part of Signoret's own types in the Vienna Museum. The close resemblance to *Aspidiotis cydoniæ* of Comstock is at once apparent: and I am now of opinion that the species figured on plate xiv of "The Coccidæ of Ceylon," under the name of *cydoniæ*, should be more rightly assigned to *lataniæ*, Sign.

I have, unfortunately, no typical American examples of Comstock's *cydoniæ* for comparison; but both the figure (pl. xiv, fig. 1) and description (p. 295) in the "Annual Report of the Department of Agriculture, 1880," agree in every particular with the figure of Signoret's *lataniæ* now appended.

In the type of *lataniæ* from the Vienna Museum, the female puparia are of a very pale creamy-white colour, being coated with the fine white fibrous matter which covers the under-surface of the leaf of its food-plant (*Latania borbonica*). The exuvia are not so densely coated, and form a fulvous-yellow spot in the centre of each scale. Beneath the white covering matter the secretionary area of the scale is itself of a clear fulvous yellow. The ventral scale is moderately developed, stoutest along the margin. Diameter, 2 mm.

Adult female of normal form. Breadth almost equal to length. Pygidium



broad and blunt. The median lobes only present; large and prominent; notched on each side, the notch on inner edge smallest, and sometimes scarcely perceptible. Two deep incisions on each side, with conspicuously thickened chitinous rims. Immediately lateral of each incision is a sharply pointed marginal process, which takes the place of the laterad lobe occurring in other species. One or two similar spiniform processes shortly beyond the second incision; the second process after the incision always the most prominent. A pair of pointed squames between the median lobes, and five irregularly toothed flattened squames on each side. Spines stout, with thickened chitinous bases. Circumgenital glands in four groups: upper laterals 8—10, lower laterals usually 5. Dorsal pores few, in two series, not very conspicuous. Three transverse chitinous bars across the base of the pygidium, and a longitudinal bar on each side of the genital orifice. Anal aperture large; distant from base of lobes by about its own longer diameter. Length, 1 mm.

The male has not been observed in any stage.

Amongst the Ceylonese forms that I am inclined to attribute to this species are several slight variations from the type.

The puparia, in particular, vary considerably in external appearance, their character depending upon the nature of the plant to which they are attached. Examples occurring on the smooth rind of fruits (such as oranges or figs) have the scales exposed, and showing the natural fulvous or yellowish colour. But any superficial matter on the surface of the plant is invariably incorporated into the puparia occurring on that part (*vide* fig. 7, pl. xiv, "Coccidæ of Ceylon").

In the pygidium of the adult female the chief variation is in the development of the pointed marginal processes. These are always present in the same positions, but in some examples they are much more strongly produced than in others. The distance separating the median lobes from the first lateral cleft on each side is also subject to slight variation, in some forms the thickened margin of the cleft being

close up against the base of the lobe, while in others there is an appreciable distance between them. In some forms, again, the thickened rim of the cleft itself is not so strongly developed as in others, and it then appears to be divided into two portions. This last character is probably affected by the age of the individual.

I cannot consider that any of the above slight differences are of sufficient importance to constitute even sub-species. The several forms are linked together by an unbroken chain of slightly varying individuals. In all the more essential characters they are in perfect agreement.

Croydon: June 25th, 1899.

DESCRIPTION OF A NEW SPECIES OF *METZNERIA* (= *PARASIA*)
FROM ALGERIA.

BY THE RIGHT HON. LORD WALSLINGHAM, M.A., LL.D., F.R.S., &c.

METZNERIA EATONI, *sp. n.*

Antennæ simple; light ochreous, annulate, except on the basal fourth, with brownish-grey. *Palpi* stout, recurved, smooth but thickly clothed; light ochreous. *Haustellum* long, densely scaled at the base. *Head* smooth; light ochreous. *Thorax* light brownish-ochreous, with two faintly paler longitudinal streaks. *Fore-wings* bluish-white, lined and sprinkled with fuscous; a short light brownish-ochreous subcostal streak from the base to about one-sixth, another of the same length opposite to it along the dorsum; a strong oblique ante-terminal streak of the same colour not reaching the margins; on the disc before the middle is a short dark fuscous streak accompanied by a few ochreous scales, a shorter streak occurring below it on the fold, also touched with ochreous; beneath and before this are two smaller streaks below the fold; the sprinkling of fuscous scales, evenly distributed between these streaks and the remainder of the wing, has a tendency to break into oblique patches along the outer fourth of the costa and on the basal half of the white terminal cilia, which are tipped with pale ochreous. *Exp. al.*, 14—15 mm. *Hind-wings* deeply incised below the pointed apex; rosy-grey, the long cilia pale ochreous along their base, fading outwardly to yellowish-white. *Abdomen* brownish-cinereous. *Legs* white.

Type ♂ (5858), Mus. Wlsm.

Hab.: SPAIN—Malaga (one specimen, Coll. Ragonot, No. 1141, Wlsm., 1894: Mus. Paris). ALGERIA—Biskra, 21—28.V.1894 (two specimens, *Eaton*)

I am indebted to the Rev. A. E. Eaton for a large collection of Algerian *Micro-Lepidoptera*, including this distinct new species.

Merton Hall, Thetford:

July 20th, 1899.

NOTES ON CERTAIN PALÆARCTIC SPECIES OF THE GENUS
HEMEROBIOUS.

No. 4—*H. NITIDULUS* AND *H. MICANS*.

BY ROBERT McLACHLAN, F.R.S., &c.

We deal here with two nearly unicolorous species, practically without wing-markings other than the dark points or lines on the neuration.

They agree also in having the second "post-costal" cellule in the anterior wings *open*. This is so far constant that in 50 examples of *micans* examined there is no exception, and out of 48 examples of *nitidulus* in one only is this cellule closed (and symmetrically).

Both species have rather broad-oval wings. They differ greatly in the ♂ appendages, and also in general appearance. They differ also in habits: *nitidulus* is apparently confined to Conifers; *micans* usually occurs on deciduous trees and shrubs, and even herbaceous plants.

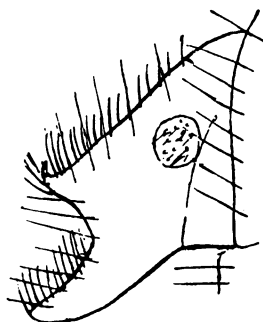
H. NITIDULUS, Fab. (1777), Hagen, McLach., Wallengr., Rostock, Reuter, &c.

ochraceus, Wesmael, Brauer.

humuli, Zett., *sec.* Wallengr., *nec* L.

obscurus, Rambur.

Varying from reddish-ochreous to reddish-brown or fuscous (immature examples much paler); the face usually shining piceous. Antennæ yellowish, distinctly annulated with brownish or blackish (or *vice versa*). Legs dingy yellowish, the tarsi darker at the tips of the joints. Abdomen fuscous (often ochreous) in the dry insect. Anterior wings more or less pale greyish-fuscous (varying to yellowish), iridescent, the costal nervules and longitudinal nervules with closely-placed dark tuberculate points, from each of which a blackish hair arises (frequently four sectors in the larger examples); pterostigmatic region obscurely reddish. Posterior wings paler, more iridescent, the dark points on the neuration confined to the costal region; pterostigmatic region usually longer and more opaque. Expanse, 13–16 mm.



In the ♂ the appendages are yellowish, densely clothed and fringed with strong brownish hairs, each arising from a minute tubercle; they are broad, and the apex is broadly and rather shallowly furcate, the branches somewhat divergent; the upper shorter than the lower, ending in a very acute inturned point; the lower also inturned but the apex is broad (probably truncate if viewed internally, but difficult to define on account of the hairs), this lower branch is deeply concave within.

Probably spread over the greater part

of Europe. Not uncommon, but somewhat local, in Britain (it was not recognised by Stephens).

There is a matter of considerable importance concerning this species that has not yet been fully elucidated. From a broad point of view there appear to be two forms, one large and dark, the other small and pale, and these, although connected by intermediate conditions, are likely to deceive an inexperienced student. My observations need maturing, but I am inclined to think the large and dark forms belong to the generation that appears in spring, and the small and pale forms to one that appears in summer, or at any rate, that the majority of each form may be thus accounted for.

H. MICANS, Olivier (1792),* Schneider, Wesmael, Hagen, Brauer, McLach., Wallengr., Rostock, &c.

punctatus and *pallidus*, Steph.

lutescens, Burm., *nec* F.

irroratus, Costa.

var. ♂, *fuscinervis*, Schneider, Wallengr.

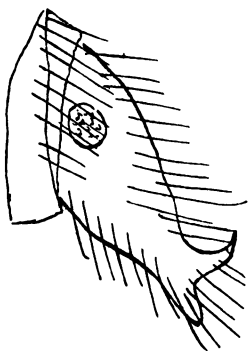
The general colour of the whole insect is pale yellow. Sides of the pronotum broadly brownish. Anterior wings whitish with a yellowish tinge, highly iridescent; neurulation pale, the costal nervules and longitudinal nervules with rather distantly placed short dark streaks, on each of which is a very faint pale grey cloud, gradate and other discal nervules dark, very faintly clouded with pale grey; pterostigmatic region yellowish. In the posterior wings the neurulation is wholly pale, save that the gradate nervules appear dark in certain lights. Expanse, 11·5—16 mm.

Appendages of the ♂ elongate, broad at the base, but gradually attenuate to the apex, which is slightly dilated and shallowly furcate, the branches divergent, the upper long and slender, its apex acute and turned strongly inward, the lower shorter and thicker, the apex obtuse and scarcely turned inward.

Probably spread over the whole of Europe and usually common: it is not, however, included by Reuter amongst the Finnish species.

var. ♂ (*fuscinervis*, Schneider).

Darker than the type-form; the antennæ slightly annulated. Wings very pale greyish without the yellowish tinge: in the anterior the sub-costa and the costal and gradate nervules are wholly fuscous, and the dark streaks on the longitudinal nervules are longer and sometimes confluent: in the posterior wings the neurulation is darker, the sub-costa, costal and gradate nervules fuscous as in the anterior.



At one time I was inclined to the belief that *fuscinervis* was the usual condition of the ♂, and that all males coloured as in the females were immature. But on examination I now think it is a common though not constant variety (with intermediate gradations), yet so far typical that most of the males taken in Britain are of this condition. Schneider described *fuscinervis* from a single example (sex not stated) from Austria, and while alluding to its resemblance to *micans*, retained it as distinct because the neuration was *wholly dark*. I have not seen an example in which this condition obtains absolutely, but there are specimens in which it does so at first sight, requiring close examination to show any pale interruptions. In my Monograph of 1868 I stated that I had seen an example labelled by Schneider himself, but I believe the actual type is now at Cambridge, Mass., in the late Dr. Hagen's collection. Wallengren retained *fuscinervis* as distinct, and thought there were slight differences in the appendages, which I am unable to discover. I have not seen a ♀ with the dark neuration of *fuscinervis*, though there are some in which the streaks on the neuration are much longer than in the majority.

In the broad sense it would only be possible to confuse *micans* with *lutescens*, but in the former there is never any trace of a sub-basal dark spot.

Olivier's description of *H. micans* (Encyc. Méthod., vii, p. 63, No. 19) is good. It is immediately followed by that of *H. immaculatus* (No. 20), and of *H. pallipes* (No. 21), both of which possibly pertain to the genus as now restricted, but have not been recognised: both of these names were omitted in Hagen's "Synopsis synonymica" of 1866.

Lewisham, London:

June, 1899.

TEN DAYS' COLLECTING IN THE CÉVENNES.

BY A. H. JONES, F.E.S.

The name "Cévennes," which is given to the important range of mountains in South-Eastern France, is variously applied. Sometimes it is used to designate a series of mountain ranges extending nearly from the foot of the Pyrenees to a distance considerably north of Lozère; but, in the more restricted sense, it is only applied to the

* The date 1811 in my Monograph of 1868 was erroneous.

area between Mont Lozère (5580 ft.) in the north and Mont Aigoual (5140 ft.) in the south. These mountains, in a broad sense, are chiefly composed of metamorphic and granitic rocks with volcanic rocks in places. The higher slopes are for the most part bare of vegetation; but the lower slopes are mostly covered with forest (principally chestnut), the valleys in some places are in a high state of cultivation.

The town of Florac, situated in the centre of this comparative limited area, I selected as my head-quarters. I was accompanied by my brother, who was on a sketching tour. We broke the journey at Clermont Ferrand, which gave me an opportunity of a day's collecting in the Auvergne. A few hours' drive brought us to the foot of the Puy de Dôme amid beautiful collecting ground, but the day was not favourable for butterflies, as the sunshine was not sufficiently continuous. *Erebia Stygne* was just coming out, and *Syrichthus alveus* was common in open places. *Geometrae* were in considerable numbers, especially *Fidonia limbaria*, which flew in swarms over the broom.

The express train to Mende leaving at 4 o'clock in the morning, we decided to start by a later one. At Arvant the train commences its mountainous journey, and after various changes we arrived at St. Flour, an interesting old town situated on the top of a hill, and presenting from the railway station a picturesque appearance. On this occasion it was quite agreeable to find that we had five hours to wait for a train, thus giving us time to visit the town.

Resting the night at Mende, the following morning I had a day's collecting on the little mountain close to the town, but the wind was bitterly cold, and I saw but few *Lepidoptera*. The top of the mountain presented an extreme barrenness, very thickly covered with stones and with scarcely a blade of grass. At Mende the railway ceases, and after a drive of six hours by way of the Col de Montmirat (about 4000 ft.), from which there is a fine view, we arrived at Florac (2000 ft.). Florac is situated in a fertile valley on the river Tarnon, which runs into the river Tarn. The rocks Les Rochers de Rochefort form the western boundary of the valley, and have a somewhat imposing appearance; along the ridges beneath them is probably some of the best collecting ground in the neighbourhood, for although the weather was bad for the first five days, cold wind, occasionally wet, and a total absence of sunshine, I managed to dislodge *Acontia luctuosa*, *Agrophila sulphuralis*, *Pellonia calabraria*, *Acidalia ochrata*, *sericeata* (a beautiful species occurring in Southern Europe), *litigiosaria*, *humiliata*, *holosericata*, *rufaria*, *Cidaria bilineata*, *Eubolia bipunctaria*, and among

the butterflies, *Cænonympha pamphilus*, *Dorus* and *arcania* (fine form), and *Syrichthus carthami*, also a beautiful example of *Botys flavalis* var. *lutealis*.

On June 25th the strong wind, which had been blowing from the north, began to drop, the sun to come out, and all was changed from dullness to brightness. On the following morning we started for the Causse Méjean, an elevated plateau about 700 feet above Florac, the locality for *Melanargia japygia* var. *Cleanthe*. Following the zigzag road under Les Rochers de Rochfort, in two hours we reached our destination. The day was perfect. The view was somewhat extensive—as far as the eye could see range upon range of treeless undulations, in places under cultivation, but generally covered with stones, with here and there a little grass as on the mountain top at Mende. I was of course too early for *Cleanthe*, and the only butterflies I saw were *Aporia crataegi* and a few *Vanessa urticae*.

June 27th, my last day at Florac, was indeed a brilliant one, and I made an excursion to L'Emperzon, a little mountain about 500 feet higher than Florac. Butterflies were quite plentiful, but locally so—*Aporia crataegi* was the only generally distributed species; *Colias Edusa* was rather common. I noticed a few *Thecla acaciæ* flying over blackthorn, and at flowers they were abundant; *Polyommatus Alciphron* var. *Gordius* was also a common butterfly in certain localities; *P. Phlæas* was scarce; *Lycæna Egon*, *sebrus*, *minimus* and *Adonis* occurred occasionally; *Melitæa Phæbe* and *athalia* (a very bright form) were met with very frequently; and *Erebia Stygne* on the higher slopes. *Limenitis camilla* among honeysuckle, one specimen freshly emerged of *Vanessa polychloros*, and *Papilio Podalirius*.

One of the attractions of Florac is the Source du Pêcher, which gushes out of the rocks just above the town. The great excursion in the neighbourhood (taking about three days from Florac) is to the Gorges du Tarn, by far the most interesting in the Cévennes.

I returned by way of Ste. Cécile, a little station on the line to Nîmes, a drive of about 30 miles through very richly wooded mountainous country. Ste. Cécile I found to be a centre for collecting silkworm cocoons from the neighbouring villages—a train nearly laden with bags of cocoons was a sight for reflection.

Shrublands, Eltham :

July 14th, 1899.

HYMENOPTERA, &c., NOTICED IN THE NEIGHBOURHOOD OF JERUSALEM.

BY A. H. SWINTON, F.E.S.

TEREBRANTIA.

Chrysis pelopaeicida, Beys.—On May 19th I saw it running inquisitively over a sunny garden wall in the manner of the English ruby-tail. I am indebted to the Rev. F. D. Morice for the determination of this species.

Mr. E. Saunders has kindly identified the following Aculeates:—

HETEROGYNA.

Dorylus juvenculus, Shuck.—Flew to the evening lamp at the commencement of June.

Camponotus maculatus and *Cremastogaster inermis*.—Wandering about the garden.

Myrmecocystus viaticus.—Running over the garden pathways in May with its abdomen elevated (scorpion-like) in the air.

Aphanogaster barbara, Linn., "Solomon's Ant."—In the dry summer weather when the vines and orchard trees freshened by the damp sea breeze and the grass is scorched by the sun, it extends its long processional strings to the crevices in the marly baked soil where it lies waste, carrying along with it the glumes of grasses and seeds of medick, which in process of time are erected into chaffy heaps. Despite the appearance of harvest home and the threshing floor, it is concluded by Tristram (Helps to Bible Study) that this material has served for nest building and not for food (Moggridge, "Ants and Trapdoor Spiders," 1874). At Jaffa, in April, I noticed the ants digging a hole for their nest, some were bringing up pellets of sand and piling them into a heap; others were carrying down medick seeds. As regards the differentiation of the two Mediterranean seed-storing species, *barbara*, Linn., and *structor*, Ltr., Mr. Saunders says that *structor* is usually smaller, duller, more hairy, and less brightly coloured. The males and females of this genus are considerably larger than the workers.

FOSSORES.

Pompilus brunneus, Klug.—A conspicuous insect on the Hill of Evil Council at the end of June. It settles on the seedy flower heads, and on seizure one or both sexes emit a raneid odour similar to that of *Pimpla instigator* and *Helwigia elegans*, and sting sharply. Wing expanse, 2 inches; a small male, 1-2 inches.

Sceliphron (Pelopaeus) spirifer, Linn.—In July. I formerly noticed this insect plentiful near Turin in Italy.

DIPLOPTERA.

Vesper orientalis, Linn.—Settled on the vine leaves during the summer in company with a fly, *Laphria dizonus*, Lw., which in the glare of the sunlight it closely resembled. In August it had made a nest in the joints of the stone wall.

Eumenes esuriens, Fab., 8/7.—Probably came to light, as I have another specimen from Fort Kangra, India—*Eumenes* ?, 23/5.

Polistes gallica, Linn.—I found its papery, stalked nest, in a ravine in the Wilderness of Judæa the last day of June, the perfect insects were emerging from their cells on July 14th.

ANTHOPHILA.

Melecta ashabadensis, Rad.—Distinguished from the English *armata* by the long second joint of the flagellum, which looks slightly conical.

APIARIÆ.

Apis mellifica, Lin.—A variety with pale hair and the base of the abdomen rufous. Now that the wild bees rarely nest in the rocks, and hives have disappeared from Hymettus, it would be interesting to enquire concerning the ancestral forms. As regards the bouquet of wild honey, it is recorded that that of Hymettus was perfumed with thyme, that of Provence with lavender, and that of Crete, Minorca and Narbonne with rosemary.

The scarcity of running water renders aquatic *Neuroptera* scarce; there are usually one or two dragon-flies to be seen flitting over the weeds and squirting gourds at Solomon's Pools, and another locality is the Baptist's Fountain. Terrestrial *Neuroptera* are not uncommon. A small "lace wing" (*Chrysopa vulgaris*) is not an unfrequent visitor to the evening lamp, and two small Ant Lions, that Mr. McLachlan has kindly identified for me as *Creagris plumbeus*, Oliv., and *Formicaleo tetragrammicus*, F., may be noticed sitting on the grass stems in the day time. On May 19th the larger *Palpares libelluloides*, L., commenced to take its short flights in the scrub among the olives in the hollow near the Russian seminary, west of Jerusalem, and subsequently it was frequently to be seen fluttering at the side of the pathways.

Redbridge, Southampton :

June, 1899.

Pairing of Myrmosa melanocephala.—As the habits of *Myrmosa* are so little known, perhaps the following note may prove of interest. On June 7th, working for Aculeates, I saw an insect half flying, half running up a bank after the manner of *Pompilus*, and promptly dropped my net over it. On boxing it, however, it proved to be a ♂ *Myrmosa melanocephala*, with what appeared to be sand on the last segments, but on closer examination, much to my surprise, proved to be the ♀ attached and curled round in a semicircle. Possibly they mate on the ground, and my appearance caused the ♂ to attempt to escape with his burden, but looking at the relative size of the sexes, there is little doubt that the ♂ could fly away with the ♀ if necessary.—RALPH C. BRADLEY, Lyndhurst, Mayfield Road, Moseley, Birmingham : July, 1899.

Xiphydria dromedarius, Fab., in Suffolk.—From an oak post forming part of a newly erected barbed wire fence, Mr. Ernest Elliott and I obtained at Mildenhall, on the banks of the Lark, a nice addition to the Suffolk Siricids (*vide* Ent. Mo. Mag., xxxiv, p. 213) on June 14th, 1899. This was *Xiphydria dromedarius*, Fab., whose borings had considerably impaired the post, and were distributed throughout its total height of about four feet. The bark was still *in situ*, and upon being removed the insects' heads were visible at the exits from their tunnels, which

did not, in the great majority of cases, yet quite reach the outer air. Though quite perfect, the Siricids had not attained their normal muscular power, and crowded confinement in a glass phial did not conduce to its promotion. Their antennæ appear to be exceedingly brittle, and in scarcely one example are they now both perfect. We carried away twenty-four specimens, of which but six were females, and left a great number in their burrows in a state of more or less maturity. The curious part appears to be their affection of an oak post. Cameron says it "feeds on willows, and F. Smith records it from the London district "about old willows." There were certainly willows and sallows in the vicinity, but we noted no examples upon them. Stephens records it from Norfolk, as well as from Fulham and the New Forest.—CLAUDE MORLEY, Ipswich: *July*, 1899.

P.S.—The pabulum of *X. dromedarius* should always be carefully searched, or, where practicable, brought home and preserved for a time, since it is by no means impossible that the fine Ichneumon, *Rhyssa alpestris*, Holmgr., recorded as bred from its pupæ in Norway and Denmark (Holmgr. Sv. Ak. Handl., 1860, p. 9) may occur with us if systematically searched for. It differs from the common *E. persuasoria*, L., in having the conspicuous white markings of the latter species replaced by red.

Hemerobius pellucidus and other *Hemerobiidæ* in North Devon.—On June 23rd while beating two or three detached fir trees in our garden, I secured a specimen of this somewhat rare *Hemerobius*, and subsequent efforts produced three others. On the 24th I beat another specimen from evergreen oak, but although I thoroughly beat the garden for many days afterwards I failed to find any more, but on the 25th got one *H. inconspicuus* and another on the 30th; *H. stigma* (*limbatus*) began to appear on the 23rd, and I got a few which are much redder than my Surrey specimens. The garden also produced *H. humuli*, *lutescens*, *micans*, and *micans* var. *fusconervis*. At Rochford, in the East Lynn valley, at the end of May and early in June, I secured a nice little series of *H. atrifrons*, beaten from larch trees that I noticed the previous year to be greatly affected by what seemed to be *Chermes laricis*. I also got from these trees *Micromus paganus* and *variegatus*.—C. A. BRIGGS, Rock House, Lynmouth: *July 7th*, 1899.

Coleoptera at Dagenham, Essex.—On the afternoons of April 29th and May 4th I collected on some marshy ground near this village; on both days the weather was cold and unfavourable, but most of the work was done by grubbing at the roots of reeds and grass. I got some good insects, many of them new to me, the most characteristic feature was the great abundance of *Anchomeni*. The following were the best captures:—*Bembidium fumigatum*, Duft., very scarce, *Anchomenus atratus*, Duft., *Thoreyi*, Dej., *Leistus rufescens*, F., *Alianta incana*, Er., *Ocyusa maura*, Er., *picina*, Aubé, scarce, *Homalota hygrotopora*, Kr., *Hygronoma dimidiata*, Grav., *Stenus Erichsoni*, Rye, *Rybaxis sanguinea*, L., very abundant, *Anisosticta 19-punctata*, L., *Soronia grisea*, L., under willow bark, *Eirirhinus bimaculatus*, F., and *scirpi*, F. *Chrysomela polita*, L., occurred in great profusion at the roots of the reeds; it would be interesting to know the food plant of the larvæ of this species.—T. HUDSON BEARE, King's Road, Richmond, Surrey: *July 7th*, 1899.

Molcerchus umbellatarum, L., at Wimbledon.—I took a fine specimen of this somewhat scarce Longicorn by beating dead hedge sticks in a field adjoining Wimbledon Common on the morning of July 6th.—ID.

Coleoptera in Cheshire and Lancashire.—Having an hour to spare in Manchester on Monday afternoon, June 19th, and recalling a record in this Journal about the banks of the Bollin, I made enquiries as to how I could get out there. I arrived on the banks of that stream near Hale about 5 p.m., and started to walk along them. I was soon rewarded by a specimen of *Bembidium paludosum*, Panz., and in half an hour took as many specimens as I wanted; I also found *Bledius subterraneus*, Er., and *Tachyusa scitula*, Er., two specimens, *constricta*, Er., and *flavitaris*, Sahl., being abundant, single specimens of *Trechus micros*, Herbst, and *Cryptohypnus riparius*, F., completed the afternoon's work. Half an hour at about the same time on the following afternoon on the sea shore near Hightown, between Liverpool and Southport, resulted in the capture of *Bembidium pallidipenne*, Ill., *Dyschirius impunctipennis*, Dawson, and *Bledius arenarius*, Payk., all in some numbers, the work being done between two violent rain storms.—ID.

Cassida murrae, L., &c., at Oxford.—During an enjoyable visit last week of the members of the Council of the Entomological Society to Prof. E. B. Poulton at Oxford, our party went for an afternoon walk to Boar's Hill, near that city, under the guidance of our kind host. The weather was anything but summerlike, but one or two interesting insects were noticed in the course of our ramble. *Harpalus discoides*, which has recently been taken rather freely in the district by Mr. W. Holland, was apparently not scarce under stones in a sandy field, the specimens being much larger and finer than those from Woking. On a little patch of fleabane (*Inula dysenterica*) growing in a damp spot by the side of a footpath we found *Cassida murrae*, the traces of its larvæ, in all stages of growth, being very conspicuous. Only one example of the perfect beetle was met with on this occasion, but Mr. Donisthorpe and I, in a hurried visit to the place next morning, succeeded in taking half a dozen more, all of the red form, and of so bright a colour in life as to be very inadequately represented by the dingy looking dry specimens in our collections. The larva apparently does not differ, in any material detail of structure, from that of *C. viridis* figured by Westwood (Mod. Class. Insects, vol. i, p. 377, fig. 46, 10); it is clear pea-green in colour, slightly striped lengthwise with a deeper shade of green, and with longitudinal dark sap-green markings on the dorsal surface. It eats the parenchyma of the young leaf from the upper-side, leaving the margins and under-side untouched, and when disturbed has a comical habit of elevating the excrementitious "umbrella," with which it is furnished in common with the other larvæ of the genus. Some fully grown larvæ which I brought away fed freely in confinement for a day or two, and then, attaching themselves to the side of their box, became flattened bright green pupæ with strong reddish setæ round the margins of the body.—JAMES J. WALKER, Sheerness: July 10th, 1899.

P.S.—To-day (13th) a specimen of *Cassida murrae*—oddly enough of the green variety—has emerged from the pupa, the duration of which state thus appears to be less than ten days.

Re-appearance of Acidalia emutaria at Sheerness.—It is with much pleasure that I record the occurrence during the past few days of my favourite little moth, *Acidalia emutaria*, in one of its old stations near Sheerness, and in moderate numbers. "Before the flood" (of November, 1897, which disaster has become quite an epoch here) the moth might have been looked for with some certainty in several places at the end of June, but these localities, mostly near the sea walls, were totally destroyed, and are scarcely likely to produce *A. emutaria* again for a long time to come. The present one has the advantage of being within ten minutes' walk of my house, but in other respects is by no means a desirable spot to collect in, it being simply a dusty main road, with a ditch (not too sweet swelling) on either side, and the resort of all the cyclists in the town; so that "dusking" for *A. emutaria* along this road, and searching for it at rest with a lantern after its evening flight is over, is a business more exciting than pleasant.—ID.

Reviews.

INSECTS, THEIR STRUCTURE AND LIFE; a Primer of Entomology: by GEORGE H. CARPENTER, B.Sc. Lond., F.E.S., &c. Pp. 404, 8vo. London: J. M. Dent & Co. 1899.

That the multitude of recent elementary works on Entomology now in existence find a sale is to us a convincing proof that the number of students, as opposed to collectors only, is much greater than formerly, yet from some cause or other the number of those who devote themselves to systematic work can scarcely be said to increase, the majority being fascinated by the physiological, and especially the philosophical, aspect of the subject. Mr. Carpenter's book caters for all. It is essentially a compilation—most of such books necessarily are so—in which many authors have been laid under contribution, and for the anatomical and physiological part none more so than Prof. Miall and Denny ("The Cockroach"); and most of the numerous text illustrations are also familiar. But Mr. Carpenter can claim originality in his method of treating the subject, and also in some ideas as to classification, &c., and there is a capital index. As a rule works that have been consulted are not mentioned at the place, but a number refers to a list of authors and works at the end of the book, and on referring to this we find that over 200 separate works are enumerated as having furnished information in the course of compilation. There are six chapters, devoted to the main subjects, which are treated in a concise manner. In the classificational chapters (iii and iv) 15 Orders are admitted. On the question of Evolution the author has the courage to openly dissent from those who maintain the "all-sufficiency of Natural Selection," such boldness is unusual with young writers at the present day. In points of detail there are several matters we might call in question if so inclined, and a few statements that may be looked upon as slips. On the whole we cannot but heartily commend the work to the notice of entomologists, whether they be students or collectors only, the former cannot (unless they be far advanced) fail to increase their knowledge from its perusal, the latter will be able to enrich their minds by learning much about structure and habits. The work is well printed, and a judicious use of black type enables the eye to catch the divisions of the subjects more readily.

CHATS ABOUT THE MICROSCOPE: by HENRY C. SHELLEY. Pp. 101, small 8vo. London: The Scientific Press, Limited. 1899.

An extremely elementary work in large type widely spaced, and containing no more information than could be obtained in a short magazine article. It is so elementary that the author has not thought it worth his while to explain *why* looking through an instrument causes an object to appear enlarged. The portion devoted to entomological subjects is very small, and as for the figures in this portion we are glad to be informed that the one on p. 81 represents the wing of a house-fly, that on p. 82 gives a fair idea of the wings of a humble-bee placed topsy turvy, and those on p. 83 are exceedingly coarse butterfly scales.

FLORA OF KENT: by F. J. HANBURY, F.L.S., and E. S. MARSHALL, M.A., F.L.S., with two Maps. Pp. 444, 8vo. London: F. J. Hanbury, 37, Lombard Street. 1899.

It is not our usual practice to notice botanical works, but we make an exception in this case, firstly, because Mr. Hanbury is known as an enthusiastic Lepidopterist, and secondly, because the work is likely to be of service to Metropolitan entomologists as a guide where to find food-plants, and also where there may be a chance of finding insects attached to special plants. The work has been 25 years in preparation, and naturally much has been changed during that time, and mostly for the worse in the London district. Yet "civilization" sometimes retards extinction. We know of one local Kentish plant that has been saved from extermination in a locality that is now part of London, because it is so much trodden over that it seldom flowers, and as the leaves resemble grass it is overlooked!

Obituary.

Anton Schmid died at Regensburg on May 24th, having nearly completed his 90th year. Readers of the "Entomologist's Annual" for 1856 will remember an account (p. 131) of the meeting of Stainton and Schmid at Frankfort in June, 1855, a meeting followed by a nearly life-long correspondence, and of much benefit to our late colleague in his researches with the life-histories of the *Tineina*. In connection with these his name became familiar in this country, and considering his long life one naturally arrives at the conclusion that he published a long series of papers, whereas, as a matter of fact, he left behind him next to nothing in his own name. In 1863 he published (Berl. ent. Zeit., vii) notes on the life-histories of various *Lepidoptera* (with description of a new species of *Gelechia*); in 1885 "Die Lepidopteren Fauna der Regensburger Umgegend" (Correspond.-Blatt, Nat. Ver. Regensb., xxxix), and in 1894 "Der Regensburger Raupen-Kalendar." He was one of those patient, quiet investigators who accumulate stores of valuable knowledge, and possibly dread the notoriety occasioned by giving it to the world at large. Had it not been for Zeller, Herrich-Schäffer and Stainton it is just possible we would never have heard of Anton Schmid.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: June 19th, 1899. — Mr. P. W. ABBOTT, Vice-President, in the Chair.

Mr. R. C. Bradley showed a series of *Andrena Trimmerana* and *Nomada alter-*

nata which he had been taking commonly at Moseley; also specimens of *Chortophila buccata*, which he had found newly emerged drying their wings outside the nests of the *Andrena*. Mr. P. W. Abbott, a nice little series of *Sesia sphegiformis* which he had succeeded in breeding from Wyre Forest; he had caught one or two odd specimens there before, but had not previously found the larvæ. Mr. C. J. Wainwright, a number of Aculeate *Hymenoptera* from various localities, including *Andrena fulvicrus* and *A. thoracica* from Folkestone, and *Nomada bifida* from the New Forest, and many others.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
June 8th, 1899.—Mr. J. W. TUTT, F.E.S., Vice-President, in the Chair.

Mr. Adkin exhibited a series of *Boarmia cinctaria* from the New Forest, showing an unusual range of variation for that district. Mr. Main, a number of large and brilliant species of *Coleoptera* from the West Coast of Africa, including the remarkable *Rhina amplicollis*, which has the beak much produced beyond the insertion of the antennæ and covered with bristles. Mr. Sich, living specimens of *Ephestia elutella* bred from maltings in Hammersmith, also ova of *Hepialus lupulinus*, and gave details as to the changes of colour after deposition; they were exhibited under the microscope. Mr. Dennis, ova of *Gonepteryx rhamni* under the microscope. Mr. Edwards, a specimen of the hive-bee pest, *Galleria mellonella*, and remarked on the damage so caused to bee keepers. Mr. Adkin read a Report of the Field Meeting held at Chatham on May 27th, under the guidance of Mr. Walker, R.N., F.E.S., and he also gave an account of the Annual Congress of the South-East Union of Scientific Societies, on the Council of which he had been elected.

June 22nd, 1899.—Mr. J. W. TUTT, F.E.S., Vice-President, in the Chair.

Mr. Montgomery exhibited larvæ of 1, *Pararge Megæra*; 2, *Epinephele Tithonus*, from ova, showing brown and green forms; and 3, *Enodia hyperanthus*, from ova, and gave particulars as to their food-plant and their hibernation: he also showed a new arrangement he had made for sending larvæ by post. Mr. Turner, a cluster of large ova deposited on a spray of heather, closely resembling a head of the dead flowers, and afterwards found to be those of *Bombyx quercus*. Mr. West, a specimen of *Stauropus fagi* bred from a larva found at West Wickham in 1898. Mr. Adkin, a fine specimen of *Syrichthus malvæ* var. *taras* from Milton, Sussex; a cocoon of *Hylophila bicolorana* (*quercana*), and called attention to the special construction which gave it great power of resistance to external pressure; and he mentioned the fact of having seen a specimen of *Hepialus* wallowing in the dust of the road as sparrows do, and flying off when disturbed. Dr. Chapman, specimens of *Fumea intermediella* bred, and made remarks on the brown and blackish forms; cases of a Psychid from Chili, with a curious internal structure for the support of the pupa; and cases and male examples of *F. crassirella*, pointing out the distinctive features of the species. Mr. Tutt, specimens of *Ephippiphora grandævana* from Hartlepool, with the curious long sand tubes, and described the movements of the pupæ. Mr. F. Noad Clark gave notes on Photomicrography as applied to Entomology, illustrating his remarks by his own photographs.—H. J. TURNER, *Hon. Sec.*

FURTHER STRAY NOTES ON SOUTH AFRICAN *LEPIDOPTERA*.

EDITED BY C. G. BARRETT, F.E.S.

Some further notes of interest have come to hand from my correspondents in South Africa. They were travelling by waggon across country from the King William's Town district to the Transkei (Pondoland). "Draibosch—this is a pretty place; we are encamped on the top of a hill round the base of which winds a little river marked by large trees, undergrowth, maidenhair ferns, and one beautiful tree like a tree-fern, the trunk covered with scales and growing out into knots. When E. went down to the river he found a moth floating on the water (*Rhanidophora phedonia*), and brought it up in a match box." Here follows a description of the cavalcade, not necessarily of public or entomological interest, but there is a morsel of natural history. "Apropos of the horses, one of them served us a sorry trick on Saturday night. They were tied up to the baggage waggon, and having nothing better to do while we slept, he lifted up his long neck and ate holes in three pockets of sugar, which he much enjoyed: fancy the consternation in the morning! They say he ate part of the waggon too!!" "When at Kongha the wheel of the baggage waggon was found to be unsound, so they stayed behind to get it mended while the family waggon started on for Kei River, a most beautiful place. Here Harry (who had been ill) was let out for a bit, and found a big moth floating on the river." (*Braura ligniclusula*, a male in fine condition, except a small rent in a hind-wing). "I went down to the river side with the net and caught several Ringlets'" (*Pseudonympha hyperbius* and *Mycalesis Sáfítza* var. *evenus*) "and one or two common moths, the one with a stripe on its wing (*Sterrha sacraria*) always settles on a grass stem or twig, with its fore-wings completely concealing the hind, and both in a very steep roof."

"At the Tole River (or Toleni, as I find it is called) we were obliged to wait several days, the baggage waggon not having rejoined us; however, we did not mind this much, as the insects were very good. E. and the two boys went for a long walk and found those I have packed in two boxes marked Tole River, mostly by *searching the floating refuse* in the little river where the water was low, leaving little scum-covered pools here and there among the stones. The great prize in our opinion was one which we called 'Euclid' (*Colhusa delta*, a *Noctua* with olive-black fore-wings, on which is inscribed a large triangle in straight white stripes reaching from margin to

margin). E. spied it from above as he looked over the top of a rock, hurried round to where it seemed possible to reach it, but could not see it, pulled out some floating refuse, searched further, and at last found it on the water. We had great rejoicing over it. You will find the best moths in the bottom of the boxes, as the wind was blowing through the tent and I packed them hastily lest they should be blown away. The rest may give you some idea what is to be found in these regions. It is a hilly country, the hills bare except in the hollows above the stream, where the trees grow in little copses. Why it is that we get scarcely any moths to our light and yet they are found floating on the water like this I cannot explain, for I took the lantern down to the stream at night fall, yet obtained nothing whatever. Possibly they float down from a more sheltered spot, but I think not, for they lie in the green scum—'frog's blanket' the young folks call it."

To me also this circumstance seems extraordinary, since here are *fifty species* at least taken off the water, and the specimens must have numbered hundreds, many of them in the half decayed state, which shows that they were dead before being fished out, and indeed, so damaged by the sticky scum, that they could not be set at all, much less preserved as decent specimens. Among them I find two small butterflies much damaged—*Pterygospidea Djælælæ*. and *Cyclopides metis*; three *Lithosidæ*—*Siccia caffra*, *Lysceia bigutta*, and *L. asperatella*; several *Noctuæ*, among them *Leucania Loreyi*, *L. perstriata*, Hpsn., *L. torrentium*, *Micra tineoides*, *Raparna halesusalis*, *Panilla geminilinea*, and *Sarmatia inheritalis*; many *Geometridæ*, including *Ascotis selenaria*, *Thalassodes vermicularia*, plenty of *Gonodela brongusaria* and *Osteodes turbulentata*, also *Acidalia consentaria* and *A. remotata*, *Sterrhia sacrararia* and *S. lineata*, War., *Phibalapteryx miniata*, *Coremia poseata*, *Cidaria mellisaria* and *C. viridicinctata*, *Eubolia parallelaria*, a most beautiful *Problepsis* (*Acidalia*) nearly allied to the lovely *P. ægretta*, if not a very finely marked specimen thereof, *Isoplenia trisinuata*, Warren, *Rhodostrophia orthopera*, *Xenographia pulverata*, two unnamed species of *Hyperythra*, one each of *Hemerophila*, *Boarmia*, and *Tephrosia*, and various others. Also a curious little *Uranid*—apparently an *Epiplema*, and probably new—and of *Pyralites*, *Antigastra morysalis*, *Udea martialis*, *Aproplepes infuscalis*, and our well known and not welcome *Nomophila hybridalis*!, also a few *Tortrices* and *Tineina* as yet unrecognised. As my friends were on the journey and spent but two or three days in this spot little further evidence was obtained; but whether due to great heat,

dry winds, or some attractive quality in the scum floating on the water, it is very certain that some powerful influence had been at work, and also that it was *not* of a nature beneficial to the unfortunate creatures affected by it.

Hearing of my interest in this curious circumstance, my brother has furnished a few further details. "We should have found many more moths, but the little birds along the stream side had been beforehand with us, and in many places we found only wings. The stream was weak and intermittent, in some places covered with a film, but mostly running clear. It was pretty rough climbing sometimes to make our way along it, and the smell was not good. When a stream is drying up it often is so. 'Euclid' was well out of the water, but floating upon it, probably killed by the cold. It was winter time, but not such a winter as you experience—stormy winds and fierce sunshine in the open country, and a general lack of moisture, are the leading features in our winter, with very cold nights in the deep valleys where the large rivers flow, but not so keen on the high lands. In the deep bushy dell of the Toleni, lying up in the table land, and yet protected by banks and bush from the winter's extreme of heat and cold, the insects had a specially good chance of life."

To return to my more constant correspondent.

"One thing happened at Toleni—besides the daily passing of the post cart—we saw a beautiful wild buck crossing the road near the bridge; it then came along the road in full view, to the great excitement of men and boys. I am kneeling in the waggon writing this, rain falling dismally without, light very dim and pen failing, so must finish to-morrow."

"We had a bad time for a day or two with wet and cold, no collecting, but on Monday (August 8th) we found ourselves at the Bashe River, and among butterflies again. Arthur and Harry caught several (*Junonia Octavia* and *J. Sesamus*) in a sluit, but as they had only their catapults the specimens were rather spoilt. I had an exciting chase after one which sailed round the waggon (I think attracted by the spilt sugar), but failed to catch it, so I sent the two little native boys off with a net and they caught a beauty (*J. Sesamus*). As we were winding up from the river over the hill my brother found a pretty spotted creamy-yellow moth (*Rhanidophora phedonia*). These are generally found among long coarse grass by day, flying freely and looking something like a clouded yellow (*Colias Edusa* var. *Electra*), except that they have a rather heavier flight."

Rhanidophora phedonia.—To return to this curious species—a

Noctua which looks as though it should be an *Arctiid*—having smooth shining fore-wings of a pale buff, with three white spots ringed with black in the discal cell, and pale yellow hind-wings. My sister now sends drawings of its larva—long and rather slender, bright yellow, with a broad black band round each segment, the head and anal plate more orange-yellow; hairs black, long and apparently stiff—a creature considerably resembling that of our *Acronycta alni*; but it is a looper so completely that the under-surface of the body behind the true legs is pressed closely against that portion in front of the prolegs at every step, and even when at rest; of prolegs there are six, well developed, but apparently no indications of the usual pairs of the seventh and eighth segments. This larva seems to be a general feeder, but perhaps more particularly attached to grass, though found also on *Mimosa* and low growing plants. Its cocoon is egg-shaped and firm, spun up in a tuft of leaves of *Mimosa*, which are drawn closely around it.

39, Linden Grove, Nunhead, S.E.:

June, 1899.

REVISION OF THE NOMENCLATURE OF MICRO-LEPIDOPTERA.

BY THE RIGHT HON. LORD WALSLINGHAM, M.A., LL.D., F.R.S., &c.

AND

JOHN HARTLEY DURRANT, F.E.S., MEMB. SOC. ENT. DE FRANCE.

(Continued from Vol. XXXIV, p. 136).

METZNERIA, Z.

= §*CLEODORA*, Stph., = *PARASIA*, Dp.

CLEODORA, Stph.

Type, *Tinea lappella*, L. (Crt., 1837).

§*CLEODORA*, Stph. (partim), Ill. Br. Ent. Haust. IV, 220 (1834).

1. *lappella*, L. (= **silacella*, Stph. nec Hb.), and five other species.

Crt. (partim), Br. Ent., XIV, expl. Pl. 671 (1837).

Type, *lappella*, L. [= *silacella*, Hb. ? (Crt.), = *silacea*, Hw. (Crt.)].

Curtis cited "*Tinea silacella*, Hb. ?," as the type of "*Cleodora*, Step.," and yet for many years the name has been applied to a genus not containing any of Stephens' types, and has been attributed to Curtis!

Curtis, on p. (2), expressed doubt as to *silacella*, Hb., and *silacea*, Hw., being the same species. The true *silacella*, Hb., was not one of Stephens' types, and Curtis' action established as the type of *Cleodora*, Stph., the species then known as *silacea*, Hw., *silacella*, Stph. (i. e. *lappella*, L.), but the actual species which served as the type of Curtis' description of *Cleodora* was *Cleodora cytisella*, Crt., for he wrote—"Obs. The species dissected was *C. cytisella*." This was not one of Stephens' types, and although *Cleodora*, "Curtis," has always been used for species congeneric with *cytisella*, it would appear that *Palto-dora*, Meyr., is the only valid generic name that *cytisella* has ever possessed. *Cleodora*, Stph., Crt., was never admissible in either sense, for it was pre-occupied in Mollusca (Pér. Les., 1810).

METZNERIA, Z.

Type, Gelechia (Metzneria) paucipunctella, Z.

GELECHIA, Hb. (B. β) *METZNERIA*, Z., Is., 1839, 197, (202).

1. *paucipunctella*, Z. 2. *lappella*, L. (= *aestivella*, Z.).

3. *neuropterella*, Z.

As Zeller was best acquainted with *paucipunctella*, this species should be regarded as the type of the genus.

Metzneria is omitted in Scudder's Nomenclator.

PARASIA, Dp.

Type, Gelechia (Metzneria) neuropterella, Z. (Dp., 1846).

PARASIA, Dp., Cat. Meth. Lp. Eur., 350—1 (1846).

Type, neuropterella, Z. (FR. MS., Dp.),

H.S., Stn., Frey., Hein., Stgr. & Wk., Snell., Meyr., &c.

ISCHNOSCIA, Meyr.

Type, Guenea borreonella, Mill. (Meyr., 1895).

§ *GUENEA*, Mill., Ic., III, 436—7 (1874).

Type, borreonella, Mill.

ISCHNOSCIA, Meyr., HB. Br. Lp., 783 (1895).

Type, borreonella, Mill. (= *subtilella*, Fuchs, Meyr.).

Wlsm., Ent. Mo. Mag., XXXI, 286 (1895), sunk *Ischnoscia*, Meyr., in favour of *Guenea*, Mill., overlooking the fact that *Guenea*, Mill., was pre-occupied in *Lepidoptera* [Bruand, Cat. Lp. Doubs., II, 77 (1847)]. *Bruand's* genus is omitted in Scudder's Nomenclator.

DESCRIPTION OF A BRITISH *COLEOPHORA* NEW TO SCIENCE.BY THE RT. HON. LORD WALSLINGHAM, M.A., LL.D., F.R.S., &c.¹*COLEOPHORA* TRICOLOR, *sp. n.*

Of the size and general aspect of *lixella*, Z., but easily distinguishable by the brown clothing of the basal third of the antennæ, and the distinct brownish-grey annulation of the joints beyond this to the apex.

Antennæ with a moderately long basal tuft, pale brownish (or white slightly tinged with brown), a mat of brownish scales extending along the upper side from the base to a little beyond one-third, beneath which the joints beyond the basal tuft are very distinctly banded with greyish-brown, the remaining joints beyond the brown clothing being distinctly annulate to the apex with alternate rings of white and brownish-grey, with the exception of a slender white line on the upper-side near the apex. *Palpi* slightly tufted beneath; fawn-brownish, with some whitish scales on the terminal joint (sometimes whitish with a slight brownish tinge). *Head* and face whitish. *Thorax* whitish, the tegulæ tinged with yellow. *Fore-wings* sulphur-yellow, with the same markings as in *lixella*, viz., four silvery streaks near the costa, two at the termen, one on the disc, one along the fold, and another faintly indicated along the base of the dorsum—with the exception of the latter, all are outlined by a narrow margin of brown scales, sometimes evanescent on the lower edge of the discal and plical streaks, the spaces between the costal streaks and about the apex being partially filled in with similar brown scales; the costal cilia brownish-grey tipped with whitish, the terminal and dorsal cilia brownish-grey with a few whitish scales along their base. *Exp. al.*, 18–19 mm. *Hind-wings* brown-grey; cilia brownish. *Abdomen* brownish-grey, with some whitish scales; anal tuft dirty yellowish-white. *Legs* brownish-grey, hind tibiae slightly paler than the tarsi.

Hab.: NORFOLK. Merton, 1.VIII.1891, 24–27.VII.1899.

Type, ♂ ♀, Mus. Wlsm.

This species differs not only from *lixella*, Z., but also from *ornatipennella*, Hb., and *caucasica*, Stn. (= *ornatipennella* + *turensis*, Stgr., List MS.), the only known species with which it could be confused, in the brownish tinge of the basal tuft of the antennæ, in the distinctly brown hair-clothing of the basal third of the antennæ, and in the complete annulation of the joints beyond it, whereas in *lixella* they are spotted on the under-side, but never annulate. In the fore-wings the silvery discal streak appears to be somewhat more abruptly terminated, not tapering to a point as is usual in the other species; it has also a tendency to be rather wider. The markings are somewhat variable as in those of its near allies, one or more of the subcostal streaks sometimes failing, but the antennæ at once enable one to recognise it. The ♀ is slightly smaller than the ♂.

I took fifteen specimens on July 24th, and two subsequently on the 25th and 27th respectively in a field about six miles from Merton on the Breck sands of Norfolk.

On looking through my series of *lixella* I found a single specimen of *tricolor* which was taken within a quarter of a mile from the same field on August 1st, 1891; it was a piece of waste pasture land cultivated a few years ago, but now overgrown with ragwort and other weeds. The insect was found sitting on the flowers of the ragwort (*Senecio jacobæa*), or crawling up the stems of *Triticum repens* and other grasses; no thyme was to be found anywhere in the neighbourhood. The specimens were all taken within a space of a hundred yards, beyond which none could be found. I searched for empty cases on *Clinopodium* and other low weeds, as well as on the scanty grasses, but found no trace of the larval habits—certainly it could not have fed on thyme.

Frey, Lp. Schweiz, 396 (1880), refers to a *Coleophora* "intermediate between *lixella*, Z., and *ornatipennella*, Hb.," for which he suggests the name *intermediella*, proposing to apply it if he should in future be convinced of the distinctness of the species. He gives no description or indication of the points in which it differs from its allies, and the name must therefore be regarded as having no title to acceptance. I have not studied his series, but there is no probability that he had this species before him, since it possesses characters not shared by those he mentions, and is certainly not intermediate between them.

Tinea vinetella, Schrank, Fauna Boica, II (2), 111 (1802), is omitted from Staudinger and Wocke's Catalog, it is probably *ornatipennella*, Hb., and was so regarded by Zeller, but the specimen in his collection on which he happened to place the name *vinetella*, and with which two other specimens in his series agree, seems to me to represent another distinct but closely allied form—certainly not my *tricolor*.

Merton Hall: August 10th, 1899.

DESCRIPTIONS OF THE LARVA AND PUPA OF *APROÆREMA VINELLA*, Bnks.

BY EUSTACE R. BANKES, M.A., F.E.S.

Thanks to the continued kindness of Mr. A. C. Vine, I am now able to give a more accurate and detailed account of the life-history of *Aproærema Vinella* than was possible when my previous paper on it, in Ent. Mo. Mag., 2nd ser., ix, 242—4 (1898), was written. On November 15th of last year I received from Mr. Vine a consignment of

larvæ (shown by subsequent events to have been then full-fed) that had been collected by him near Brighton on November 10th, and made the following description as soon as they reached me.

LARVA.

Length, 6 mm. In general shape tapering gradually from the middle towards both extremities.

Head much narrower than the prothoracic segment, highly polished, orange-ochraceous, more or less slightly marked laterally and posteriorly with blackish : upper mouth-parts blackish, mixed with crimson : ocelli black, polished, distinct. *Prothoracic segment* decidedly narrower than the mesothoracic, with the anterior margin whitish. *Prothoracic plate* orange-ochraceous, the rather pointed ends of it towards the spiracles being each occupied by a large and very conspicuous round black spot : the plate is divided across the middle by an inconspicuous pale line, along each side of which are three small black spots. *General ground colour* dirty whitish, but greatly obscured posteriorly by dull reddish. The dorsal line is of the pale ground colour, and on each side of it three lines of dull red alternate with two lines of the ground colour : on the anterior segments the red lines are only represented by series of red spots. In the male larva the embryo *testes* show through the back of the fifth abdominal segment as a dark blotch. *Anal plate* highly polished, blackish-brown. *Warts* and *spiracles* small, black, polished. *Hairs* and *bristles* rather long and very pale. *Ventral surface* dirty yellowish-white, not nearly so much marked with red as the dorsal surface. *Legs* highly polished, black, with narrow pale rings at the joints. *Prolegs* dirty whitish, ringed with black.

Some larvæ have the head and plates rather darker than others, and the amount of dark marking on the head varies somewhat in different individuals, but the variations are comparatively trifling.

It should be noticed that the larva of *A. Vinella* is totally distinct from that of *anthyllidella*, but shows some resemblance to that of *albipalpella*.

When received, all the larvæ had ceased feeding, and were spun up for the winter in their domiciles, which were composed either of one or more dead and shrivelled leaves of their food-plant, *Genista tinctoria*, neatly fastened with silk to one another and to the stem, or of two or more leaves fastened together at the edges : the leaves are frequently more or less hollowed out from the sides, having evidently, when fresh, afforded food to the larvæ, and the chambers, which are neatly but sparingly lined with strikingly white silk, are often so very small and inconspicuous that they are easily overlooked, even when under one's very eyes. I imagine that in nature the larvæ of this, the earlier brood, pupate, as a rule, in their winter domiciles : in confinement, however, some of them wandered about in the spring, but this may have been due to the abnormal conditions, and the disturbances, to which they are subjected, the unavoidable opening of their chambers causing many of the owners to forsake them.

When writing my previous paper, I was informed by Mr. Vine (*vid. l. c.*, p. 244) that the larvæ found by him towards the end of April were then *becoming* full-fed, but he is now convinced that he was mistaken on this point, and my experience in rearing the larvæ of the first brood has proved conclusively that they *hibernate full-fed*, for they all alike refused to touch fresh shoots of their food-plant supplied to them in the spring.

Being anxious to know when the larvæ pupated, and to describe the pupa, I kept them under close observation during the spring. By April 13th two larvæ had been replaced by cocoons of parasites, and on May 19th it was found that two ichneumon flies (not yet identified) had already emerged: these were followed by two more on May 22nd, on which date a careful examination of all the larvæ revealed the disappointing fact that not a single one of them had yet begun to pupate. A few had shrivelled up and died, while several were still alive, though much shrunk in size and unhealthy-looking. On June 9th last the few survivors were examined, when it was found that three larvæ had pupated successfully, four or five had dwindled away and looked to be "at death's door," while one had been replaced by the cocoon of a parasite.

PUPA.

The following description was made on June 9th from pupæ which had doubtless assumed this state a few days previously.

Length, 4.5 mm. *Greatest breadth, circ.*, 1.25 mm.

Rather broad across the head, and conspicuously so across the thorax, whence it gradually tapers off towards the anal extremity. *Segmental divisions* well defined. *Skin* highly polished. *Eyes* showing through as large dark spots. *Antennal cases* of almost equal length with wing-cases. *Head and thorax*, as well as antennal-, wing-, and limb-cases, deep fuscous suffused with reddish-orange. *Wing-cases* reaching to the end of the fifth abdominal segment. *Abdominal segments*, with a very short, sparse, whitish pubescence, rufous-orange-fuscous, the incisions between the movable segments being rufous-orange. *Anal extremity* rather pointed, armed only with a good many pale yellowish hooked bristles. The *free abdominal segments* in the three pupæ examined, which all yielded male moths, were the 5th and 6th.

The colour of the pupa gradually becomes darker, and is blackish before the escape of the imago.

The first moth emerged on June 16th, and the two others appeared on the following day. Judging from these three, the time of emergence is between 7.30 and 9 a.m. The second specimen has a *very* distinct and clearly-defined white fascia, nearly straight, though rather nearer the base on the costa than on the dorsum, across each fore-wing, and represents an extreme form of the variety previously

described (*l. c.*) as var. *fasciata*, of which the examples then known showed only indistinct whitish fasciæ: this distinct fascia is indicated on the under-side of the wing by a white costal spot.

The cold ungenial weather during last spring doubtless accounts for the larvæ having been so late in pupating, and is probably to some extent responsible for so many of the larvæ having died off instead of pupating. At any rate, Mr. Vine searched most diligently, on my behalf, during the spring for the larvæ in their native haunts, but only succeeded in finding one solitary individual which had not yet assumed the pupa state when it reached me on June 13th.

The Close, Salisbury:

July 24th, 1899.

A NEW GENUS OF TERMITOPHILOUS STAPHYLINIDÆ FROM BORNEO.

BY D. SHARP, M.A., F.R.S.

Although the number of Termitophilous insects at present known is very much smaller than that of the dwellers in ants' nests, it is probable that this is due to the comparatively small extent of investigation that has been made of the dwellings of Termites. Termitophilous insects seem to be much more aberrant than myrmecophilous.

DIOXEUTA, *gen. nov.*

Pedes tenues; tarsi 4, 5, 5-articulati, posteriores articulo basali elongato. Caput angustum, posterius perparum constrictum. Coxæ omnes contiguæ. Metasternum brevissimum. Abdomen dilatatum, apicem versus acuminatum.

This genus is not at all closely allied to any other known to me; in form it a little approximates to *Apteranillus*, but the resemblance is only a remote one, and there is but little similarity between the two in the structure of the sterna. These parts seem to be very peculiar, the mesosternum being membranous with a chitinous ridge extending longitudinally along the middle, while the metasternum is so abbreviate in the middle that the apices of the middle coxæ in repose almost touch the bases of the hind legs. This character and the peculiar shape give the genus an isolated position in the *Myrmedoniina* division of the *Aleocharidæ*. The parts of the mouth, so far as they can be seen, exhibit no peculiarity of structure. The prosternum is small and apparently of almost membranous consistence.

A single example only having been secured, I am unable to give

a full account of the structure. The genus I think at present had better be placed between the Homalotates and the Pronomeates of Mulsant and Rey.

The genus *Termitotropha*, just described by Wasmann from South African termitaria (*Deutsche ent. Zeitschr.*, 1899, p. 178), is evidently allied to *Dioxeuta*, though it differs so much in form that it is clear the two are distinct.

DIOXEUTA MICROPS, *sp. nov.*

Piceus, corpore anteriùs nitido, fere impunctato, antennis pedibusque gracilibus, tibiis tarsisque sordide testaceis; capite parvo, angusto, abdomine latissimo.

Long., 3 mm.

Antennæ slender, not thicker externally, each joint longer than broad, second joint only slightly shorter than the third. Head very small, narrow, shining; eyes small. Prothorax small, a little broader than the head, rather broader than long; all the angles rounded, the base and sides very finely margined; shining, impunctate, with a few short, erect, fine setæ. Elytra small, scarcely longer than the thorax. Abdomen much broader than the anterior parts, convex beneath, lateral margins thick; punctuation indistinct, setæ depressed and fine, but distinct. Legs small and slender; tibiæ thin, a little rounded on their outer aspect, the hinder evidently thinner towards the tip; hind tarsi elongate filiform, the basal joint very long and set with numerous very fine and short wire-like setæ beneath.

Sarawak. In the nest of *Termes malayanus*, August 28th, 1894.
G. D. Haviland.

Only one example was procured. I have little doubt it is a female.

Cambridge: August, 1899.

NOTES ON *ÆSCHNA CÆRULEA* AND *SOMATOCHLORA ARCTICA*
AND *METALLICA* IN INVERNESS-SHIRE.

BY JAMES J. F. X. KING, F.E.S.

ÆSCHNA CÆRULEA.—I have observed this species in widely separated districts in Strathglass and Glen Affrick; it occurred at various levels, from 400 ft. to 1200 ft.; the last specimen taken, a fine ♂, was upon August 12th.

SOMATOCHLORA ARCTICA was taken at 300 ft. level in Strathglass in June, and early in August in Glen Affrick at 1400 ft.

SOMATOCHLORA METALLICA has been seen for two months from June 15th in Strathglass and Glen Affrick, and is now in very poor condition. The ♀ is very scarce. I have managed to secure a very nice series.

The ♀ hangs from twigs just upon the surface of the water, and vibrates its wings, evidently "calling" the ♂; twice I have seen this,

and each time a ♂ has swooped down and carried off the ♀ before I could capture it. The ♀, when intent upon ovipositing, flies around the lake, and when she sees a suitable place settles down to her work, the wings vibrating and the body being dipped into the water.

Guisachan School House, Beaulieu:
August 14th, 1899.

AN OBSERVATION ON THE VOLUNTARY SUBMERGENCE OF THE
FEMALE OF *ENALLAGMA CYATHIGERUM*, CHP.

BY ROBERT McLACHLAN, F.R.S., &c.

On the last day (August 1st) of a recent short visit to the wonderful ancient volcanic district of Auvergne, I joined an excursion party from Clermont Ferrand to the little Lac d'Aydat by vehicle. The distance was long, the route mountainous, the scenery magnificent, the sky cloudless, and the heat great. The distance permitted of only two hours' stay, but some collecting was done, mostly in the way of *Agrionidæ*, a few species of which (mainly *E. cyathigerum* and *Agrion Lindenii* and *puella*) were abundant (*Ischnura elegans* and *Lestes sponsa* were also represented). A weedy patch on the lake (which is the basin of an ancient crater) was exceptionally rich in *Agrions*, and there were many of them paired in the familiar manner. When watching a pair with a view to capture, the female suddenly disengaged herself and rapidly entered the water. I am of opinion that she did not descend the stem of a water plant, but was in the free element. She certainly descended for several (six at least) inches, and the wriggling motion of her abdomen when doing so was conspicuous. It was impossible to determine whether the wings were used in any way. It has been said that the male awaits the re-appearance of his partner in such cases, and that the operation is repeated. In this particular instance the statement could not be verified. The male settled quietly near the spot on a water weed, and being anxious to determine the species a sweep of the net made him captive. In the meantime the female was lost sight of. The point that struck me most was the probability that the submergence was not effected by the aid of a plant, and the wormlike motion of the abdomen below the surface favoured this supposition. This motion was much like that of the free end of a worm on a fish hook, and it occurred to me that the submerged females of *Agrionidæ* intent on oviposition must form attractive morsels to fish (this particular lake was full of fish), and furnish another instance of the struggle for existence that everywhere obtains.

Lewisham, London:
August 6th, 1899.

THE INSECTS OF A SUFFOLK BROAD IN AUGUST.

BY CLAUDE MORLEY, F.E.S., &c.

We all know something at least of the redundancy of insect life in the Norfolk Marshes, but I fancy very few have tempted fortune south of the Waveney, excepting Mr. Bedwell, whose particular province of Oulton Broad I shall be careful to leave untouched in the present notes. BARNBY is a village of some 250 inhabitants, midway between Lowestoft and Beccles, possessing rich marsh lands, which extend to the northern confines of the county. The whole is now drained and converted into water meadows and cattle marshes, but in two or three places are clumps of trees and tangled undergrowth, generally enclosing reedy water, where wild fowl most do congregate; and the intersecting ditches are rich in bog plants. The "Broad" and those adjacent once formed part of the estuary of the Waveney, and were reclaimed probably about the same time as was the great Bedford Level. The soil is for the most part peat, I suspect underlaid by white clay or marl. By far the most prolific plant, when I paid the locality seven visits in August, 1898, each of but a few hours' duration, was *Angelica sylvestris*, which possesses peculiar attractiveness for all sorts of insects, though *Spiraea* and *Alisma* yielded their quota. Although the "Broad" comprises some 400 acres, but a square five-eighths of a mile was explored, and only insects noted within this scope are recorded. How superficial was my search the predominancy of anthophilous species, which could easily be netted on the tables, will abundantly evidence.

The beetles met with (including such marsh species as *Hydrophilus piceus*, *Stilicus orbiculatus*, *Stenus fornicatus*, *Scirtes orbicularis*, *Silis ruficollis*, *Anthocomus rufus*, *Donacia cinerea*, *versicolora*, &c.) have already been noticed in my "Coleoptera of Suffolk."

Many *Hemiptera* were beaten from the ubiquitous alders: *Phytocoris populi*, *Etorhinus angulatus*, *Orthotylus flavinervis* (new to Suffolk), *Psallus ambiguus*, and *P. obscurellus* (new to Suffolk), being not uncommon; *Gastrodes ferrugineus* (larva), uncommon with us, was taken from pine.

The *Neuroptera* were less abundant than might have been expected, but they received no particular attention: *Psocus longicornis*, on water weeds, pine and alder, *Lestes sponsa*, common, *Hemerobius subnebulosus* and *Limnophilus sparsus* only are worthy of notice.

Orthoptera were represented by *Stenobothrus rufipes* and *viridulus*, and *Tettix bipunctatus*, the latter sparingly; *Xiphidium dorsale* (new to Suffolk) was abundant in the herbage, and once or twice occurred on *Angelica*; it had, I believe, been previously recorded from Cambridge alone, north of the Thames.

The *Hymenoptera* were abundant, and fine series occurred. Of the *Aculeates*: *Salix exaltatus*, *Pemphredon lethifer*, *Gorytes 4-fasciatus* (one ♀), *Crabro chrysos-*

tomus and *cribrarius*, common, *Vespa rufa* (♂♂), not rare, and *Sphecodes similis* were all taken upon the *Angelica*. Of the *Tenthredinidæ* I swept *Blennocampa ephippium* from ditches, beat *Fenusa melanopoda* (new to Suffolk) from the bushes, and noted *Abia sericea* and several common species upon the tables.

The *Braconidæ* were common, but few were taken: *Rhogas* (*Anostenus*) *irregularis*, Wesm., was swept from herbage in ditches, *R. circumscriptus*, Nees, *Microgaster sticticus*, and *Chelonus inanitus*, Nees, taken from *Angelica*, while *Copisura* (*Chænon*) *anceps*, Curt., was swept at sundown. The curious *Chalcis sispes* was not rare by sweeping the margins of ditches. The *Ichneumonidæ* were particularly abundant on *Angelica sylvestris*, and a fine and varied lot, of which I set 89 specimens. Many are not yet named, more are doubtful, and a few certainly new to Britain. All these I exclude. The remainder include: *Ichneumon luctatorius*, Linn., *I. latrator*, Fab., *I. primatorius*, Forst. (*grossorius*, Fab.), one fine ♂; *Phaogenes ophthalmicus*, Wesm., not uncommon; *Alomyia debellator*, Fab., both type and black forms sparingly; *Phygadeuon* (*Trichocryptus*) *cinctorius*, Fab.; *Cryptus erythropus*, Gr. (? *lugubris*, Gr.); *Theroscopus pedestris*, Fab., one swept from reeds; *Pezomachus fasciatus*, Fab.; *Limneria* (*Sagaritis*) *annulata*, Gr., *L. (Meloboris) crassicornis*, Gr., *L. (Angitia) ezareolata*, Ratz., *L. (A.) fenestralis*, Holmgr., *L. (Omorga) Faunus*, Gr.; *Mesochorus vittator*, Zett.; *Mesoleptus sulphuratus*, Gr.; *Mesoleius semicaligatus*, Gr.; *Polyblastus varitarus*, Gr., swept at sundown; *Bassus latatorius*, Fab., *B. graculus*, Gr., *B. nigratarsus*, Gr., *B. sulcator*, Gr. (*areolatus*, Holmgr.), *B. pulchellus*, Holmgr.; *Pimpla stercorator*, Fab.; *Glypta mensurator*, Gr. (*lugubrina*, Holmgr.); *Lissonota bellator*, both sexes very common.

Of the *Lepidoptera* few were observed, the best being *Lithosia muscerda*, of which one specimen was beaten from alder on the 11th. I believe the species is pretty well confined to Horning, though Mr. Eedle recorded it from Lakenheath, Suffolk, some years ago, in "Fenland." *L. griseola* was common on the alders, with *Calligenia miniata* and *Geometra papilionaria* singly. *Zygæna trifolii* was nearly over, though one or two specimens with the intermediate spots coalesced and forming a triangular blotch were noted. *Platypteryx falcula* occurred on birch, and *Eudorea cembra* on water weeds. *Phrygas* *Birdella* was beaten from alder, and two or three *Nemotois minimellus* were noted on *Angelica*, with hosts of *Ecophora flavimaculella*.

There were great numbers of *Diptera* on the flowers, and a few of those boxed proved new to my MS. county list: *Ptychoptera albirana*, *Ephelia marmorata*, *Stratiomya potamida* and *furcata*, *Beris vallata* (new to Suffolk), beaten from *Pinus sylvestris*, a group of which grows in the centre of the tangled trees; *Actinia tibialis*, *Therioplectes solstitialis*, *Chrysogaster cameteriorum*, *Chilosia scutellata* and *C. impressa* (new to Suffolk, and quite common on the *Angelica* flower), *Pyrophana ocyimi*, *Syrphus umbellatarum*, *corollæ*, *luniger*, &c.; *Exorista vulgaris*, *Phyto melanocephala*, *Graphomyia maculata*, *Morellia simplex*; *Hyetodesia semicinerea*, *Mydæa nigrigella*, *Azelia Macquarti*, *Sciomyza griseola*, *Tetanocera sylvatica* (the last five species new to Suffolk), *T. ferruginea*, *T. robusta* (in cop.); *Platycephala planifrons*, locally common; *Chlorops taniopus* and *C. (Centor) cerceus*.

The surrounding country—Oulton Broad, Benacre Broad, Corton Cliffs, Henstead, Kessingland, and Beccles—has untouched entomological stores for any collector in search of new worlds to conquer.

Ipswich: August, 1899.

The food-plant of Epischnia Banksiella, Richardson.—In the "Proceedings of the Dorset Natural History and Antiquarian Field Club," vol. xix, is a beautiful plate (with explanation) by Mrs. Richardson of the life-history of this species, originally supposed to be peculiar to the Island of Portland, but since found by Mr. Richardson at Lulworth. The plant is *Inula crithmoides*. This *Inula* is a distinctly local plant in Britain, and it is probable the insect may be found in other places in these islands where the plant occurs, and also on the continent. As a hint to metropolitan entomologists it may be mentioned that Mr. Hanbury, in his "Flora of Kent," gives several localities for the plant in the saltmarsh district of the N.E. part of the county, and if we mistake not we have seen it on the Essex coast opposite, growing amongst *Aster tripolium*. It is incredible that a moth should be confined to a small corner of the Dorsetshire coast.—EDS.

Deilephila lineata in the New Forest.—W. F. Rawnsley, Esq., J.P., of Park Hill, Lyndhurst, informs me that a perfect specimen of *Deilephila lineata* (*livornica*) was caught in his garden in June, 1888, by the Hon. D. Carnegie, and is still in his possession.—H. Goss, Surbiton Hill: August 3rd, 1899.

Pachetra leucophæa, &c., in East Kent.—From June 2nd to 8th last I had a short but most enjoyable collecting expedition in East Kent in company with Mr. F. J. Hanbury. We each took a fine series of *Pachetra leucophæa*; and among the many other species which occurred to us during our visit were *Agrotis cinerea*, not uncommon; *Hadena genista*, common; *H. contigua*; *Neuria saponariæ*; *Acidalia ornata* and *Scoria dealbata*, both species just getting well out, and consequently in perfect condition; *A. subsericeata*, *Ligdia adustata*, *Phibalapteryx vitalbata*, *Agrotis puta*, *Xylophasia hepatica*, &c., &c. A curious feature was the number of dormice which our sugar attracted, as many as five or six fine fellows being on some evenings seen sipping the sweets. Botanically the district is very rich in orchids, and we had the intense pleasure of seeing (growing wild) a plant of the now excessively rare lizard orchis (*Orchis hircina*), a species which Mr. Hanbury had referred to in his recently published "Flora of Kent," as being now probably extinct in the county.—GEO. T. PORRITT, Crosland Hall, Huddersfield: August 3rd, 1899.

Nothochrysa capitata in Yorkshire.—During several hours' collecting in Bishop's Wood, near Selby, in company with the Rev. Cyril D. Ash, on June 17th last, I secured three specimens of *Nothochrysa capitata*.—ID.

Psocus major, Loens, at Merton (Norfolk).—Lord Walsingham has kindly sent me an example of this insect labelled "Merton, i, viii, 1899." No doubt it only wants looking for, but at present this is the third British specimen I have seen. I recorded it as British in this Magazine, 2nd ser., v, p. 243, from an individual taken by myself many years ago near London. Mr. Briggs mentions it as having occurred to him at Bookham, Surrey, in 1895 (Ent. Mo. Mag., 2nd ser., ix, p. 66).

It will not be out of place to state that September and October are about the best months in the year for *Psocidæ*. Much may sometimes be done in July and August, but, as a rule, they are too dry, for *Psocidæ* delight in about the same degree of damp that favours the growth of the minute cryptogamic plants on which most of them feed.—R. McLACHLAN, Lewisham, London: August 11th, 1899.

Note on the habits of Emus hirtus, L.—During the past month I have seen this insect in plenty at Fusio, Canton Ticino, as well as in other valleys, both in Switzerland and in N. Italy. The readiest way to obtain specimens was to examine the heaps of manure (which are to be found everywhere just outside the doors of the cow-houses) while the sun is shining on them. The insect crawls slowly over these heaps, frequently seeking a fresh hiding place, and occasionally taking to wing. It is much easier to secure than either of the two *Leistotrophi* which swarm in such situations, these latter flying off at the slightest alarm. Turning over the cow-dung in the roads and pastures was not nearly so profitable a method. Perhaps if manure-heaps were searched during the heat of the day, particularly in places like the New Forest, the insect would not remain so rare with us.—G. C. CHAMPION, Horsell, Woking: August 5th, 1899.

Fresh localities in Surrey for Amara famelica, Zimm., and A. infima, Duft.—Till recently I have only seen examples of these very local species from the neighbourhood of Chobham and Woking. For *A. famelica*, Netley Heath (between Gomshall and Horsley) may now be added, specimens having been found there by Mr. Walker and myself during the present season; and for *A. infima*, Frensham Common, where it is not rare at the roots of heath near the large ponds. *A. famelica* seems to be one of the commonest species of the genus in the Swiss and Italian Alps, as well as in the Austrian Tyrol, where I have noticed it in various places high up on the mountains, usually in company with *A. Quenseli*, Sch., and also in the valleys.—ID.

Aphthona herbigrada, Curt., var. ?, in Yorkshire.—Mr. G. W. Chaster, of Southport, has recently sent me some specimens of an *Aphthona* to name, with the note that it was abundant last year at Ingleton, Yorkshire. These examples must, I think, be referred to the variable *A. herbigrada*, Curt. They differ from the insect found commonly on the chalk in Kent and Surrey in being of an æneous colour, and in having more elongate antennæ in the males. The bluish-green southern specimens, as well as the brassy northern ones, sometimes have the prothorax almost smooth, and in the males of both forms the antennæ vary in length, while in the females there is no difference in this respect. Weise, in his description of *A. herbigrada* (Naturg. Ins. Deutschl., vi, pp. 919, 920), notes the variability in colour, and he also mentions two named forms—one (*laevicollis*, Rey) with the prothorax almost smooth, the other (*dimidiata*, Weise) with the head and prothorax cupreous.—ID.

Coleoptera at Llanfairfechan.—With very few exceptions the *Coleoptera* recorded by myself in this Magazine last year, as occurring at the above locality, were again met with during a short stay there in June last, and I have the following additional species to record among the less common ones:—on the hills within a few miles of the town, *Pterostichus athiops* and *Trechus obtusus* under stones; *Homalota tibialis* and *H. oblongiuscula* in moss, and four specimens which appear to be referable to *H. cavifrons*; *H. indubia*, *H. indiscreta* (?) and *Gymnusa brevicollis*, a few in moss about a mountain stream; and in the same situation, those three

species which so frequently seem to occur in company, i. e., *Quedius auricomus*, *Dianous cœrulescens* and *Stenus Guynemeri*. Other species found in moss were *Quedius umbrinus*, *Philonthus nigrita*, *Lesteva pubescens* and *L. muscorum*. *Athous vittatus* and *Mantura chrysanthemi* were both obtained by sweeping, but of the latter only one specimen, and in a field towards the base of Penmaenmawr. *Ancyrophorus aureus* and *Trogophloeus arcuatus* were both found in flood-refuse after a thunder storm. I was unable to examine this refuse till two days after it was deposited, or probably other interesting insects would have been found. I worked the salt marshes fairly thoroughly, and found there, under a dead hedgehog, *Philonthus puella* (1), *Homalota canescens* and *H. divisa*; in a heap of refuse *Oxyptoda Waterhousei*, *Homalota coriaria*, *H. nigricornis*, and *H. germana*; by sweeping, *Anisotoma ovalis*, *A. punctulata*, and *Polydrusus chrysomela*; under stones, *Homalota littorea* occurred in some numbers; this would seem to be a considerable extension northwards of the range of this species in Britain. Several examples of *Diglossa mersa* were found on the shore.—G. GEO. ELLIMAN, Chesham: August 9th, 1899.

Philonthus astutus, Er., at Plymouth.—On April 16th, one of the first bright days of the spring, I had the good fortune to capture an example of this interesting beetle flying in the hot sunshine. Its identity has kindly been verified by Mr. Champion.—J. H. KEYS, 1, Sea View Avenue, Plymouth: August, 1899.

Monohammus sartor, F., at Plymouth.—On June 22nd a specimen of *Monohammus sartor* was brought to me by Mr. Elworthy, builder, of Plymouth, found resting on the wall outside his carpenter's workshop. Curiously enough, a few years ago I received from the same source a fine male *Lucanus cervus*—quite a rare beetle in this district—taken within a few yards of the place in which the present capture was made.—LD.

Bembidium Schüppeli, Dej., in Cumberland.—This insect was placed in the British list on the authority of specimens taken by the late T. J. Bold on the banks of the river Irthing in Cumberland, in 1854. It was afterwards found in several other localities, but all I think in the south of Scotland, and I am not aware of the species being subsequently recorded from an English locality. Mr. Bold appears to have worked the Irthing district with considerable success, and since I took up the study of our native *Coleoptera* I had been desirous of working the same ground. The district is, however, somewhat remote, so it was not until May 6th last that I was able to visit it. *B. Schüppeli* at once turned up in small numbers, but on a subsequent visit, a month later, it was rather commoner. I was much interested, too, to find *B. stomoides* on the same ground—another of Bold's addition to our list from this locality. I had previously met with this species in the valley of the Gelt, a tributary of the Irthing.

B. Schüppeli occurs on the mudbanks which fringe the river, but *B. stomoides* prefers the shingle beds, where it is associated with *B. tibiale*, *atrocæruleum*, *decorum*, *monticola*, and *punctulatum*.—F. H. DAY, 6, Currock Terrace, Carlisle: July 25th, 1899.

Coleoptera in Scotland.—After leaving Ullswater I went on for a fortnight in Scotland; but the weather was not propitious, and beetles were far from plentiful. My only captures worthy of mentioning were the following:—

In the neighbourhood of Dunoon, *Cryptohypnus maritimus* (5) and *C. dermestoides*, the latter in numbers, under shingle on the borders of a stream; *Egialia sabuleti*, one specimen; *Bembidium atrocaruleum*, two specimens.

In the neighbourhood of Tarbet, Loch Lomond, *Carabus arvensis*, one specimen; *Tachinus elongatus*, one specimen, on the summit of Ben Reoch; *Meloe violaceus*, a huge female, crawling on the road to Loch Katrine, July 3rd seems a very late date for this species. Only three examples of *Nebria Gyllenhalii* turned up on the mountains, and beetles generally were very scarce—partly, I think, on account of the abundance of spiders, and partly owing to the fact that there was a mole run under almost every large stone. *Aphodius lapponum* was plentiful above the 2500 feet level, but I did not find a single example lower down.—ID.

Sleeping habits of a Bee, Crocisa ramosa.—An example of *Crocisa ramosa*, one of the "Cuckoo Bees," was observed for several nights roosting on a dead twig projecting from a bank near my bungalow. The peculiar attitude affected by many *Hymenoptera* was particularly noticeable in this case. The extremity of the twig was grasped by the jaws of the insect; the legs were folded close against the body, which was extended almost horizontally, supported by the jaws alone; the antennae were brought together and extended in front. This particular bee spent most of its time in slumber: it took up its position every afternoon as nearly as possible at 2.45 p.m., and remained in the same place until after 9.30 a.m. next morning. It slept very soundly. On one occasion I picked off the twig to which it was attached and accidentally dropped it on the ground without disturbing the sleeping insect in the least.—E. ERNEST GREEN, Ceylon: February, 1899.

Reviews.

THE CAMBRIDGE NATURAL HISTORY, Vol. vi. INSECTS, Pt. ii: by DAVID SHARP, M.A., M.B., F.R.S. Pp. 626, 8vo. London: Macmillan and Co., Limited. New York: The Macmillan Company. 1899.

The first part of Dr. Sharp's important work appeared in 1895, and was noticed in this Magazine, 2nd series, vii, pp. 21-22. After considerable delay (for which the author is not responsible) the complete work is now before us. In our former notice we took occasion to give a short outline of the classification or sequence of Orders adopted, and the general method of treatment, with a glance at the special portion (*Aptera*, *Orthoptera*, *Neuroptera* and part of *Hymenoptera*) there noticed in detail. While feeling compelled to criticize the adopted scheme to some extent, it was with pleasure that we then commended the book as "indispensable to all who seek to extend their general knowledge." Now that we have the whole work before us we reiterate all that we said in its praise on the former occasion, and believe that few works on general entomology will be more frequently consulted for a long time than this. The amount of time expended on research must have been enormous, and the judgment exhibited in condensing the various recorded statements and observations is above all praise. We do the author no injustice when we say he is known to possess strong opinions on certain points, but he has given in this book

what we consider a very fair and impartial view of these points, only reducing what some enthusiasts are wont to consider facts to the rank of hypotheses. The illustrations in Vol. ii are, as before, admirably chosen, and many of them original. In our former notice we wondered how the remaining Orders (*Hymenoptera* in part, *Coleoptera*, *Lepidoptera*, *Diptera* and *Hemiptera*) were to be contained in a second volume if treated in the same detail. As a matter of fact not quite the same detail has been observed, save for the *Hymenoptera*, which occupy a further 183 pages, and nothing has been noticed that is redundant. Dr. Sharp has very cleverly avoided, as a Coleopterist, an undue—we might say unconscious—partiality for his favourite Order, and has, in a really marvellous manner, dismissed it in a little over 100 pages. He commences with the Lamellicorns and ends with *Rhynchophora* and *Strepsiptera*. A feature here is the grouping together of a multitude of families (including those in the *Clavicornia* and *Serricornia*) into a heterogeneous series, termed "*Polymorpha*," which we scarcely think will meet with general approval, and the grounds for which are not sufficiently obvious: the *Strepsiptera* are considered as only doubtfully Coleopterous. It has also been contrived to compress the *Lepidoptera* into a little over 100 pages. The Classification adopted for the *Heterocera* is chiefly that of Sir George Hampson. In common with most entomologists who are not specially Lepidopterists, the author does not apparently feel very happy when treating on the Order, and deplors the diversity of systems that exists, even in the nomenclature of wing neuration (or, as he prefers to term it, "nervuration"). *Diptera* occupy nearly 100 pages (the *Aphaniptera* are considered as a sub-order), and are admirably treated. There is a long paragraph devoted to blood-sucking forms, independent of ordinal position. Possibly the remarks on the dissemination of disease by *Culicidae* (p. 468) might have been more extended. The little Order *Thysanoptera* intervenes before the *Hemiptera*, which occupy about 70 pages.

There is one omission in the work, and in our opinion a very commendable one. The author has had the courage to do without a phylogenetic tree!! If he were asked why, we think he would probably say that he has not yet made up his mind sufficiently to enable him to invent such a structure, and it would not do for him to copy from someone else, for on this point originality and increasing complexity form the rule and not the exception. Formerly these diagrammatic ornaments (?) used to consist in a honest stem and branches; now there are often surreptitious suckers that must weaken the main plant!; and there is a tendency to adopt the actual tree-like form, such as one sees in the old genealogies of county families. But this is a digression.—R. McL.

THE MICRO-LEPIDOPTERA OF GUERNSEY: by W. A. LUFF. Reprinted from the "Transactions of the Guernsey Society of Natural History" for 1898. Pp. 11. 8vo.

Mr. Luff is to be commended for his persistent endeavours to get together a list of the insects known to occur in his island home. By "*Micro-Lepidoptera*" the groups *Pyralidæ*, *Pterophoridaæ*, *Tortricæ* and *Tineina* are intended. Of these 218 species are enumerated, but this must be utterly inferior to those that exist, and if systematic breeding were carried on we are of opinion the number might easily be doubled; on the other hand, the way in which the island is being gradually covered by glasshouses will probably bring about the speedy extinction of some

species, if it has not already done so. Three species are given as not recorded for Britain, viz., *Tortrix pronubana*, Hb., *Adela violella*, and *Fumea* (?) *lapidicella*, Zell.: probably the last should be omitted from this category.

Obituary.

The Rev. William Farren White, M.A., F.E.S., for 36 years Vicar of Stonehouse, Gloucester, died at Bournemouth on July 21st, aged 66. He entered at St. John's College, Cambridge, graduated in 1856, and was ordained two years later. He was an occasional contributor to this Magazine (to which he was an original subscriber), and a good naturalist, but his writings were not numerous. Having, however, written a series of articles on Ants for a popular journal, he published them (with additions) in book form in 1883, under the title, "Ants and their ways" (cf. Ent. Mo. Mag., xix, p. 262). He joined the Entomological Society of London in 1865. A year or two ago he retired from active duty and came to reside near London.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: July 13th, 1899.—Mr. J. W. TUTT, F.E.S., Vice-President, in the Chair.

Messrs. J. R. Pickin, of Brixton; A. A. Buckstone, of South Norwood Park; S. W. Gadge, of Brixton; and G. W. Tombs, of Dalston; were elected Members.

Mr. Lucas exhibited a finely marked specimen of *Libellula quadrimaculata*, var. *pranubila*, taken at the Black Pond, Esher. Mr. R. Adkin, bred specimens of *Pachnobia hyperborea* from Rannoch. Mr. Step, specimens of the Hermit Crabs, *Eupagurus pubescens*, *E. sculptimanus*, and *Anapagurus Hyndmanni*, and contributed notes on their structure, habits and occurrence; and he also showed the marine Hemipteron, *Aërophilus Bonnairei*, from Porthscatho. Mr. Turner, the following species and varieties of Dragonflies taken during the Field Meeting at Byfleet on June 10th:—*Pyrrosoma nymphula* (*minium*) with *P. tenellum* for comparison; *Enallagma cyathigerum*, with a variety having the longitudinal portion of the black mark on the basal segment wanting; *Ischnura elegans* and a red bodied female variety; *Agrion puella*, *A. pulchellum*, *Erythromma najas*, *Brachytron pratense*, and *Calopteryx splendens*; he also showed a male *Anax imperator* (*formosus*), and both sexes of the very local *Orthetrum cancellatum* from Woolmer Forest. Mr. Lucas read a Report of the Field Meeting held at Byfleet on June 10th. Mr. Adkin read a Report of the Field Meeting held at Chalfont Road on July 1st. Mr. Carrington gave a very interesting account of a recent visit he had made to Bradwell-juxta-mare, a village on the Blackwater near Southminster.

July 27th, 1899.—Mr. F. NOAD CLARKE in the Chair.

Mr. Fremlin exhibited insects he had taken during a holiday at Stornoway, Isle of Lewis, and gave a full account of the neighbourhood from a natural history point of view; among the exhibits *Melanippe montanata* and *Camptogramma bilineata* were much varied. Mr. West, a specimen of the snake-fly (*Rhaphidia*) and *Pediopsis fuscinervis*, and *Cixius cunicularis* with var. *Dionysii*, all from West Wickham. Mr. Clark, a photomicrograph of the egg of *Eubolia cervinata*.—HY. J. TURNER, Hon. Secretary.

the New Forest, and I found several more specimens among some *Diptera* collected by Mr. Beaumont at Oxshott in Surrey. There is no doubt that this species is identical with the *Cordylura brevipennis* of Curtis, which he captured in the Isle of Wight, therefore it cannot be called an unrecorded British one.

Sp. 2.—A. TIBIELLA, Ztt.

This little fly is of a dark grey colour, with few hairs or bristles; it possesses many of the characters of the former species, but wants the thickly tufted spines under the fore femora. The eyes are large; frontalia grey, with glistening white margins, dark vertex, and oval yellow spot in front; antennæ black, reaching the epistome, having third joint with upper angle acute; arista short, much thickened for half its length; palpi pale, with ends a little dilated; proboscis black; thorax and abdomen dull dark grey, and immaculate; wings brownish; legs with femora black, tibiæ bright yellow and tarsi rufous; fore femora with four or five short spines on the under-side. Length, 3 mm. Rare.

GEN. X.—CERATINOSTOMA, Meade.

Scatophaga, Hal., Mcq.

Gen. ch.—Head sub-globose; eyes small and oval; cheeks and chin large; oral setæ numerous; antennæ short, with plumose arista; palpi filiform; proboscis long, horny and pointed, with small lobes; abdomen long, sub-cylindrical, and clubbed at the apex in the male, ovato-lanceolate and pointed in the female; legs strong and spinose; body generally smooth, having few hairs or bristles.

This genus is rather anomalous, occupying a position between the *Cordylurinae* and *Scatophaginae*.

Sp. 1.—C. OSTIORUM, Hal. (1832).

oceana, Mcq. (1838).

maritimum, Meade.

This maritime fly, living among seaweed and shingle, is of a blue-black colour, and very similar in shape to a *Cordylura*. It has the frontalia black; face silvery white; antennæ black, with arista plumose, the hairs being confined to the basal half as in *Scatophaga stercoraria*; palpi pale and sub-clavate; proboscis black; oral setæ several in number, but not long; thorax schistaceous, partly covered with grey tomentum, and sub-striated; scutellum black, with four long setæ; abdomen thick, sub-cylindrical, smooth, with large incurved apex in the male, ovo-lanceolate in the female; wings long, flavescent, with dark veins; legs black and spinose; tarsi ciliated beneath with soft yellow hairs. Length, 8 mm. Not common.

SUB-FAM. SCATOPHAGINÆ.

GEN. XI.—FUCELLIA, Dsv.

Halithea, Hal.

Gen. ch.—Dark grey species, with head sub-globose; eyes round;

oral setæ numerous; antennæ short, with bare arista; proboscis rather short and thick; palpi filiform; scutellum with six bristles; abdomen depressed, sub-ovate, with small hypopygium, and setose apex; legs robust, spinose, with a small projecting tuft of bristles at the base of the hind femora in the male.

- 1 (3) Antennæ, palpi and legs black 1. *fucorum*, Fln.
 2(1)(3) Palpi red, with black apices, and tibiæ rufous 2. *maritima*, Hal.
 3 (1) Antennæ with basal joints rufous 3. *muscaria*, Ztt.

Sp. 1.—*F. FUCORUM*, Fln.

Head with frontal space wide, with dark brown stripe; face grey; antennæ black, with arista nude and thickened for one-fourth of its length; palpi black; proboscis black; thorax dark bluish-grey, with three sub-defined black stripes and numerous bristle spots; shoulders and sides light grey; abdomen dark grey, with a sub-distinct median brown stripe, and lateral oblique black marks when viewed in certain lights; legs black, hind femora with small tufts of hair at the base in the male. Length, 5—6 mm. Common on the sea coast.

Sp. 2.—*F. MARITIMA*, Hal.

marina, Mcq.

fucorum, var. β , Ztt.?

This species resembles the last in its general characters, and may perhaps be only a light coloured variety of the same. It has the frontal space grey with the front margin red; the palpi are yellow, with black ends; the abdomen is light grey, with some slight dark reflections, but often quite immaculate, and the hinder edges of the segments are said sometimes to have pale margins; the legs have the tibiæ testaceous. Length, 5—6 mm. Less common than *F. fucorum*, but found in the same situations.

Sp. 3.—*F. MUSCARIA*, Ztt.

This well marked species is dark grey; the head has the forehead prominent; frontal space red, with black vertex; antennæ black, with basal joint rufous and third joint twice as long as the second; arista thickened nearly to the middle; epistome and face white, with a rufous tinge, the former rather prominent; palpi black; thorax yellowish-brown, sub-striated; abdomen dark grey, immaculate, pubescent, with apex setose, narrow and lanceolate in the male, and ovato-lanceolate in the female; hypopygium indistinct; wings grey; legs black; femoral tuft in the male small, but distinct. Length, 4—5 mm.

I received both sexes of this little fly from the late Mr. Cooke, of Bowdon. I do not think that it has been previously recorded as British. I overlooked it when drawing up my late paper upon unrecorded British *Diptera*.

GEN. XII.—SCATOPHAGA, Mgn.

Scatomyza, Fln., Ztt.

Scatina, p., Dsv.

Gen. ch.—Oblong, yellow-grey species, often thickly haired, with

sub-globose head; widely separated oval eyes; drooping antennæ, of short or moderate length, with the third joint obtuse, and a plumose or bare arista; oral setæ large, usually three or four in number; palpi filiform and setose; proboscis mostly long and horny; thorax oblong and convex; scutellum with four or six bristles; abdomen rather short, ovato-cylindrical in the male, with small hypopygium, depressed, ovate, and pointed in the female; wings long; legs strong and spinose.

- 1 (18) Arista plumose.
- 2 (7) Antennæ black.
- 3 (6) Femora grey.
- 4 (5) Abdomen clothed with long yellow hairs 1. *stercoraria*, L.
- 5 (4) Abdomen with short pale hairs 2. *merdaria*, F.
- 6 (3) Femora yellow, with black stripes 3. *cineraria*, Mgn.
- 7 (2) Antennæ red or brown.
- 8 (11) Wings with third and fourth long veins convergent.
- 9 (10) Large yellow-haired species 4. *scybalaria*, L.
- 10 (9) Small dark brown species.....9. *eximia*, Hal.
- 11 (8) Wings with the long veins parallel.
- 12 (15) Cross veins clouded.
- 13 (14) Little cross vein only clouded; third joint of antennæ brown...
5. *analis*, Mgn.
- 14 (13) Both cross veins clouded; antennæ quite red or yellow 6. *suilla*, F.
- 15 (12) Cross veins unclouded.
- 16 (17) Thorax covered with yellow tomentum 7. *lutaria*, F.
- 17 (16) Thorax covered with slate-coloured tomentum 8. *inquinata*, Mgn.
- 18 (1) Arista pubescent or nude (sub-gen. *Scatina*, Dev.).
- 19 (21) Palpi black 10. *fontanalis*, Rnd.
- 20 (21) Palpi pale, with black tips.....11. *bipunctata*, Mcq.
- 21(19)(20)Palpi quite pale.
- 22 (27) Legs yellow.
- 23 (24) Abdomen yellow 12. *heteromyzina*, Ztt.
- 24 (23) Abdomen fuscous 13. *calida*, Hal.
- 25 (26) Fore femora with a black mark upon the upper surface...
14. *squalida*, Mgn.
- 26 (25) Fore femora with bases black 15. *arrogans*, Hal.
- 27 (22) Legs black.
- 28 Middle femora with bases rufous.
- 29 (30) Species very hairy 17. *villipes*, Ztt.
- 30 (29) Species with few hairs 16. *litorea*, Flin.
- 31 Tibiæ testaceous 18. *rudis*, Hal.

Sp. 1.—S. STERCORARIA, L.

This (the common dung fly) is more or less thickly covered with reddish-yellow hairs. It has the frontal space wide, with grey edges and red median stripe; vertex

black; antennæ black, with arista feathered with long hairs on the basal half; palpi yellow; face golden-yellow; proboscis black; thorax yellow-grey, sub-distinctly striped, and covered with yellow hairs, which are very thick on the sides and under part; abdomen dark grey, thickly covered with tawny hairs; wings flavescent, with little cross veins nebulous; legs hairy and spinose; femora grey, coated with yellow down; tibiæ and tarsi testaceous. Length, 7—8 mm. Very common.

Sp. 2.—*S. MERDARIA*, F.

This species is very similar to the last, but always smaller, paler in colour, and much less hairy. Colour dull grey; antennæ black; palpi white; proboscis black; thorax yellow-grey, sub-distinctly striped; abdomen dark grey, thinly covered with pale yellow hairs; wings grey, with little cross veins clouded; legs testaceous, with the femora black and bare. The colour and degree of flocculence vary very much in different specimens; some closely resembling examples of *S. stercoraria*. Rondani says that these two species pair together, and he considers them to be only varieties of the same. Length, 6—7 mm. Very common.

Sp. 3.—*S. CINERARIA*, Mgn.

This is described as being black, covered with grey tomentum; frontalia red; antennæ black, with plumose arista; face yellow; palpi rufous; thorax light ash-grey, marked with two dark lines and bristle spots; the sides are clothed with grey hairs; wings with yellow roots; legs ciliated with fine black hairs; bases of the femora as well as the tarsi black, tibiæ and front parts of the femora bright yellow. Length, 6—7 mm. Curtis* records the capture of this rare fly.

Sp. 4.—*S. SCYBALARIA*, L.

This fine yellow species has the frontalia bright red; face yellow; antennæ with arista yellow; palpi pale; proboscis piceous; thorax grey, covered with yellow tomentum; abdomen dark grey, clothed with rufous tomentum, and having sub-distinct black transverse incisions; wings dark yellow, with third and fourth long veins converging towards the apex, and the outer cross vein much curved; legs testaceous, covered with scattered bristles and numerous yellow hairs. Length, 10 mm. Rare.

Sp. 5.—*S. ANALIS*, Mgn.

This little slender species has the frontalia wide and rufous; face yellow, with white reflections; antennæ rufous, with the third joint partly brown; palpi pale; proboscis black; thorax dark yellow-grey, with sub-distinct dark stripes, and bristle spots; sides grey; scutellum brown; abdomen brown, coated with yellow hairs; hinder segments rufous; wings yellow, with long veins parallel; inner cross veins thickly clouded, outer ones very slightly nebulous and straight; legs testaceous, with numerous spines and bristles, as well as hairs, upon the femora and tibiæ. Length, 5—6 mm. Rare.

* Brit. Ent., 405.

Sp. 6.—*S. SUILLA*, F.*spurca*, Mgn.

This closely resembles *S. analis* in size, form, and colour, but differs by having the third antennal joint quite rufous, the shoulder points and tip of the scutellum yellow, the hinder edges of the abdominal segments blackened, the wings with both the transverse veins equally clouded, and the legs without any bristles, and with few hairs. Length, 5—6 mm. Rare.

Sp. 7.—*S. LUTARIA*, F.

This yellow species somewhat resembles *S. scybalaria*, but is smaller, has the arista black instead of rufous, and the long veins parallel instead of convergent; the thorax is brown, covered with yellow tomentum; the shoulder points and the scutellum are yellow; the abdomen is yellow, indistinctly marked with longitudinal and transverse stripes, and covered with numerous yellow hairs; the wings have the long veins parallel, and the cross veins clear; the legs are yellow, with scattered bristles and hairs. Length, 8—9 mm.

This species has so many characters in common with the two preceding, that they have all three been looked upon as identical by Rondani; and they vary so much, and there are so many intermediate forms, that it is sometimes difficult to discriminate them. The last described (*S. lutaria*) is by far the most common variety, if they are to be looked upon as the same species. Generally distributed.

Sp. 8.—*S. INQUINATA*, Mgn.

This common species also closely resembles the last (*S. lutaria*), but differs by being smaller, more grey in colour, and by having the shoulder points and scutellum (except the tip) gray; the wings are flavescent, with parallel veins, and have the cross veins slightly clouded; the abdomen is dark brown, with a yellow apex, and covered with a few pale hairs; the legs are yellow, with scattered spines and yellow hairs. Length, 7—8 mm. Very common.

Sp. 9.—*S. EXIMIA*, Hal., Curtis.

Curtis* briefly describes this species as being similar to *S. inquinata*, with the exception of having the third and fourth long veins rather convergent at the apex of the wing; it was found by Mr. Haliday at Holywood, in Ireland.

Sp. 10.—*S. FONTANALIS*, Rnd.

This differs from all the other species in this genus by having the palpi black. It is dark grey in colour, the frontalia are fuscous, with a yellow tinge in front; the antennæ are black, with long and slightly pubescent arista; the face is white, with slightly projecting epistome; the oral setæ are long; the thorax has three subdistinct dark stripes; the abdomen is dark grey; the wings are slightly flavescent; the legs are black and setose. Length, 4 mm. I found a female (Rondani did not know the male) of this rare fly at Windermere in 1892.

Sp. 11.—*S. BIPUNCTATA*, Mcq.

Macquart describes this species as being cinereous, having the palpi yellow,

* Brit. Ent., 405.

with dark tips; face white; frontalia with a black stripe, and orange forehead; antennæ black, with a black spot on each side at the root; arista tomentose; thorax light grey, with four brown lines; the lateral ones coalescing in front; scutellum grey, sometimes testaceous; abdomen grey, with anal segments rufous; wings with transverse veins clouded; legs yellow; tarsi fuscous; fore-legs nigrescent. Length, 4 mm. I have not seen this fly, but Mr. Verrall places it in his list.

Sp. 12.—*S. HETEROMYZINA*, Ztt.

This little species is rather aberrant, the palpi being somewhat clavate, so Becker places it among his *Hydromyzinae*. It has the frontal space grey, with yellow forehead; antennæ short, with basal joints rufous, and third one black; arista slender and nude; cheeks and epistome white, with a red tinge; palpi white; proboscis black; oral setæ two in number; thorax cinereous, with two sub-distinct brown stripes; abdomen yellow and glabrous; wings clear; legs yellow, with piceous tarsi, and furnished with few bristles. Length, 3 mm. Very rare.

Sp. 13.—*S. CALIDA*, Hal.

A dark brown robust species. Frontalia with vertex and sides pale grey, and a dark red median stripe; antennæ with basal joints rufous, and third one black; arista bare; palpi pale, long, sub-clavate, and setose; proboscis black; thorax sub-striated, with scutellum cinereous, and marked with numerous black bristle spots; abdomen dark brown, with apex rufous, and having a longitudinal dorsal rufous stripe; wings with bases flavescent; legs robust, testaceous, with piceous tarsi, and numerous spines and bristles. Length, 8 mm. Not common, but met with in both England and Ireland.

Sp. 14.—*S. SQUALIDA*, Mgn.

Colour, yellowish-grey; frontal stripe yellow, with occiput grey; eyes round; antennæ ferruginous, with bare arista; face and epistome white; palpi pale; proboscis black; thorax with scutellum dark grey; abdomen mostly dark grey (but sometimes sub-rufous), with red anal segments; wings flavescent, with cross veins clouded; legs ferruginous, ciliated with pale hairs, and having the fore femora marked on the upper surface with a large, black, oblong spot or patch. Length, 6—7 mm. Not rare.

Sp. 15.—*S. ARROGANS*, Hal.

fuscinervis, ? Ztt.

This species is very similar to the last, but has the fore femora nigrescent at the base, and not marked on the upper surface; it also differs by having the third antennal joint rather fuscous, the shoulder points sometimes rufous, and the cross veins more deeply clouded. The fore femora are nigrescent from the base to past the middle. Length, 6 mm. Rare.

Sp. 16.—*S. LITOREA*, Flin.

decipiens, ? Hal.

Dark grey; frontalia light yellow, with vertex and occiput grey; antennæ

black; face and epistome white; palpi long, filiform, and white; thorax grey, with sub-distinct brown stripes; abdomen grey and immaculate; wings grey; legs dark grey, with apices of femora mostly rufous, as well as the bases (with the coxæ) of the middle ones; tibiæ and tarsi testaceous and piceous; hind tibiæ spinose. Length, 6 mm. Common on the sea coast.

I believe that the *S. decipiens*, Hal., must be a variety of this species; Haliday says that it has the head broader, but he gives no other distinctive character.

Sp. 17.—*S. VILLIPES*, Ztt.

This species closely resembles the last, but is rather larger, and much more hairy; it also differs by having the two basal joints of the antennæ rufous; the palpi clavate; the abdomen narrower, with a red apex, and covered like the thorax with long grey hairs; the legs are coloured like those of *S. litorea*, but are much more villose. Length, 7 mm. Rare.

Sp. 18.—*S. RUDIS*, Hal.

This species, taken in Ireland by Haliday, is thus briefly described by Curtis: * "Obscurely cinereous; thorax lineated; hypostoma and tibiæ ferruginous; abdomen of male clothed with yellow hairs."

GEN. XIII.—*THYREOPHORA*, Latr.

Gen. ch.—Head sub-trigonal; eyes small, round, and nude; face very oblique, antennæ short, with bare arista; oral setæ several in number; proboscis long, with large lobes; palpi sub-clavate; thorax with rows of dorsal bristles; scutellum very long in the male, with the end truncate, and furnished at each angle with a long strong spine, short and triangular in the female; abdomen short; wings without the auxillary vein; legs long and hairy.

Sp. 1.—*T. FURCATA*, F.

Head reddish-brown; face shining yellow; frontalia with a black spot upon the vertex; antennæ reddish-brown, with the third joint oval, and arista thickened to the middle; thorax bluish-grey, indistinctly striped; scutellum of male half the length of the abdomen, with the first half slate-coloured, and the hinder part red; abdomen dark brown, with the anal segments sometimes rufous; wings flavescent; legs testaceous, robust, and very hairy. The whole fly is villous, the hairs on the abdomen being almost woolly. Length, 6 mm. Very rare. Found by the Rev. L. Jenyns near Ely.

This peculiar fly is very abnormal. It differs from all others in this family by the shape of the head and scutellum, as well as by the want of the auxiliary vein.

Bradford: June, 1899.

ON A NEW TEA PEST FROM INDIA.

BY E. ERNEST GREEN, F.E.S.

In March last I received from Dr. George Watt, Reporter on Economic Products to the Government of India, specimens of a new scale insect from the Duars, a tea district in north-east Bengal. Dr. Watt supposed the insect to be allied to *Ceroplastes*, but examination shows it to belong to Comstock's genus *Cerococcus*, which has hitherto been recorded from America only, (though I am inclined to consider the Australasian genus *Solenophora*, Mask., as scarcely separable from *Cerococcus*).

The present species is quite distinct from any of those known from America, and is now described under the name of

CEROCOCCUS FICOIDES, n. sp.

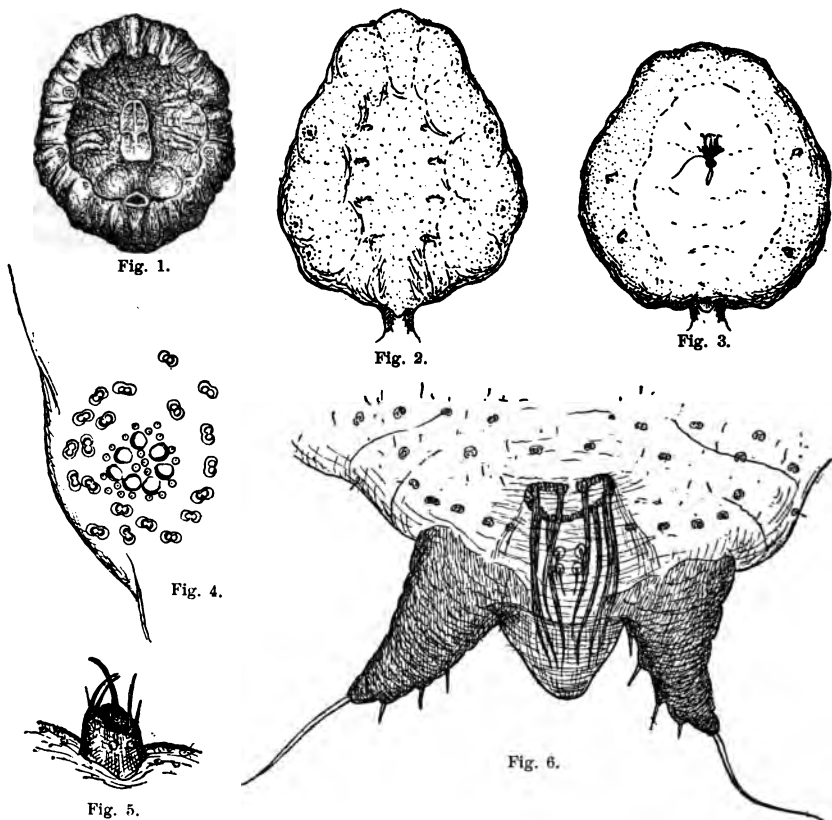
Test of adult female dull reddish-brown, more or less obscured by a coating of black fungus, subspherical; median dorsal area distinctly concave, with what appears to be the first larval pellicle embedded in the centre. Sides of test irregularly fluted or segmented, as if formed by the fusion of numerous recurved marginal processes. In some examples this lateral area extends further inwards, leaving only a small median concave area; in others the concavity is quite extensive (fig. 1). The test is hard and compact, and completely encloses the insect, leaving only a conspicuous orifice with raised rim above the posterior extremity. On each side, close to the juncture of the lateral with the median area, are three small groups of minute perforations corresponding with some multilocular glands on the body of the insect. In some specimens a pinkish-white filament projects from each of these perforated spots, extending inwards over the concave median area: but these filaments are very brittle and easily broken off. Diameter of fully developed example about 3 mm., height, 1.25 to 1.50 mm.

Adult female (figs. 2 and 3) irregularly elliptical, broadest across the post-thoracic region; median dorsal area slightly concave, with four pairs of depressed spots. On each side, situated slightly within the margin on the dorsal surface, are three multilocular glandular patches, consisting of a cluster of from three to seven large oval pores intermixed with small circular pores and surrounded by an irregular ring of figure-of-8 shaped pores (fig. 4). These glands appear to be of the same nature as those occurring in the neighbourhood of the spiracular orifices in the several species of *Carteria*, and their function is probably identical. By the secretion of porous waxy filaments a passage in the compact test is secured, admitting a sufficient supply of air while preventing the entrance of water. The rudimentary antennæ, each consisting of a chitinous tubercle surmounted by a ring of stout hairs (fig. 5), are situated in slight indentations on the extreme anterior margin. The spiracles, situated within the margin on the ventral surface, are large and well defined, but the parastigmatic glands, consisting of two or three pores only, are very inconspicuous. The mouth-parts are moderately large, the mentum distinctly 2-jointed. The so-called anal lobes (fig. 6) are strongly chitinous and dark coloured, bearing at the extremity a rather short stout seta, and on the inner edge three or four stout spines. Between the lobes, and situated dorsally, is a prominent chitinous triangular plate. The anal ring bears eight longish stout hairs: and on the ventral

wall of the depression in which the ring is placed are four conspicuous spines. In the older examples, after oviposition, the anal lobes are directed upwards and situated well on the dorsal surface. There are numerous very minute figure-of-8 shaped pores scattered over the body, particularly towards the caudal extremity, intermixed with simple circular pores connected with cylindrical ducts. The larger 8-shaped pores are concentrated round the lateral glandular organs (the madriporiform bodies of Comstock ?). Longer diameter, 2.50 mm.

I can find no male tests amongst the material submitted to me.

Hab. : on the young stems of tea plants from the Duars, India.
From the collection of Dr. George Watt (Reg. No. 11,769).



EXPLANATION OF FIGURES.

Cerococcus ficoides.

- Fig. 1—Test of adult female, dorsal view.
 „ 2—Adult female, removed from test, dorsal view.
 „ 3— ditto ditto ventral view.
 „ 4—Multilocular gland from dorsal surface.
 „ 5—Antenna.
 „ 6—Anal lobes of adult female, dorsal view.

August 15th, 1899.

ON SOME ALGERIAN *MUTILLIDÆ* COLLECTED BY THE
REV. A. E. EATON, M.A.

BY EDWARD SAUNDERS, F. L. S.

These notes, which would have formed part of a more extensive paper in course of preparation, are being now published as Monsieur E. André has asked me to allow him to include the new species here described in his Monograph of the Palæarctic *Mutillidæ*, which is nearly ready for publication.

MUTILLA HUMERALIS, Radosz.

Of this species, which is very closely allied to *barbara*, L., I believe the ♀ is undescribed, and I therefore give a description of its characters.

Head black, rugose, clothed with long black hairs, a patch of decumbent silvery-gold hairs on the forehead; antennæ piceous; thorax red, rugose, the rugosities rounded and smooth, clothed with long black hairs, which, however, are neither so long nor so abundant as in *barbara*, the perpendicular anterior truncature and collar of the pronotum black, the former densely fringed with black hairs as in that species, sides of the thorax slightly sinuate, the anterior and posterior angles largely rounded, width of the thorax in front scarcely greater than it is behind, in this point differing considerably from *barbara*, which has the anterior lobe of the thorax distinctly dilated, narrowing rather suddenly to the lateral sinus, behind which the sides are subparallel; abdomen rugosely punctured, the base of the 2nd and 5th segments finely shagreened (probably the hidden bases of all the segments are similarly sculptured), black, clothed with short adpressed black hairs, intermixed with red, which in certain lights impart quite a rusty tinge to the segments, and occasional long bristles, basal segment with a broad, interrupted, apical band of silvery hairs, 2nd and 3rd segments with similar bands, twice interrupted, the silvery hairs on the 3rd extending to its base, 6th entirely clothed with silvery hairs, pygidium rugosely punctured, its sides narrowly margined and reflexed near the apex; abdomen beneath castaneous-brown, clothed with long, erect, pale hairs, 2nd segment largely and rugosely punctured, bearing two little sharp triangular tubercles on the disc towards the apex, in exactly the same position as in the ♂; legs black, clothed with silvery hairs, tibial spines rather shorter than in *barbara*. Long., 10 mm.

1 ♀, Constantine. "Ou M'cid, November 17th, 1894."

Besides the characteristic tubercles of the 2nd ventral segment, which may possibly be variable and liable to disappear, the form of the thorax appears to me to sufficiently distinguish this from *barbara*; a long series of course might prove this character to be unreliable, but in all the examples of the latter species which I have seen the peculiar dilatation of the thorax in front is quite constant.

MYRMOSA EPHIPIUM, Rossi, ♂.

Jurine Hymen., pl. ix, gen. 14.

The specimens which Mr. Eaton has taken of this species, like

those of our *melanocephala*, vary very greatly in size, but they also vary in colour, some having the bright red pro- and mesonotum of the type, and others being entirely black. These six specimens were taken together with a series of twelve examples of a very closely allied species, which I am describing below as new, and which also varies in size and colour in identically the same manner. For a long time these puzzled me completely, till I dissected out their 8th segments and armatures; these afford excellent characters, and are identical throughout the colour varieties of each series. I refer to *ephippium* the six which have the 7th dorsal segment of the abdomen impressed at the apex and truncate as described by André (Feuille des Jeunes Natural., III Ser., Nos. 330 and 331, p. 3) and by Costa under the name of *thoracica* (Prosp. Imen. Ital., 2, p. 125); in this species the 8th ventral segment has the central process much longer than the lateral ones, widened towards the apex, which is semicircularly rounded, the lateral processes are curved, flat, and parallel-sided, converging towards the central one, but not quite touching it at their apices, which are obliquely truncate; the 7th dorsal segment is sharply toothed on each side.

Le Tarf, on *Fœniculum*, July 24th to 26th, 1896.

MUTILLA FRATER, n. sp., ♂.

Identical with the preceding in coloration, most of the specimens having the pro- and mesonotum bright sanguineous-red, the rest of the insect being black; in one small specimen the scutellum is black, and another small one is practically entirely black, having only the slightest indication of a browner tint about the pronotum, the wings have a brown band near the apex as in *ephippium*, and the puncturation and sculpture are as in that species, but the 7th dorsal segment is not dentate at the sides, but merely sinuate, and has only its extreme apex narrowly truncate, there is no apical fovea or impression, but the surface near the apex is densely clothed with fine short hairs, the 8th ventral segment has the central process angulated at its sides at its greatest width, whence the sides converge to the apex, which is pointed, the lateral processes are narrow, straight and subparallel, their apices pointed.

Le Tarf, on *Fœniculum*, July 24th to 26th, 1896.

Unfortunately Mr. Eaton only met with males of this species, so that the ♀ has yet to be determined.

APTEROGYNA.

In examining the ♂ specimens of this genus taken by Mr. Eaton I notice some peculiarities in structure which do not appear to have

been described. Radoszkowsky (Hor. Soc. Ent. Ross., xix, pl. ix & x, figs. 64—67) figures the terminal segments, &c., of several species, but does not point out the peculiarities of the 8th ventral valve, which seem to me to be most noteworthy; he observes, however, that the 8th dorsal valve bears no penicilli.

In *Mutilla* the 8th dorsal has well marked penicilli, and the 8th ventral is simple.

In *Myzine* the 8th dorsal has well marked penicilli, and the 8th ventral consists almost entirely of an upturned process, it having scarcely any ventral surface.

In *Apterogyna* the 8th dorsal is peculiar in being practically membranous throughout and devoid of penicilli, and the 8th ventral in having a shining brown chitinous dorsal covering. The apical half of its ventral surface is turned up at an obtuse angle to the basal; from the surface of this inclined plane an upturned process is emitted, the upper edge of this inclined plane meets the apex of the dorsal surface of the segment, which gradually declines back from the line of juncture to the level of the base of the segment, a chamber of some kind being evidently formed between the dorsal and ventral surfaces. The dorsal surface is brown and very shining, and bears at each of its apical corners an upturned, somewhat trapezoidal, projection with very sharp angles; these occupy exactly the same position as the penicilli on the 8th dorsal of the allied genera, and at first I fully thought that this dorsal surface could be removed, and would prove to be the real dorsal valve of the somite; there is, however, I feel sure no doubt that the whole is ventral, as the armature is projected above this dorsal surface which we have been considering. I do not know any other case in which the 8th ventral segment has a distinct dorsal plate. *Apterogyna* seems to take a natural place between *Mutilla* and *Methoca*, *Myzine*, &c. Another strongly marked character in the male of *A. Olivieri*, and less so but distinctly in *A. pici*, André, is the patch of golden bristles on each side of the 6th ventral segment; the 3rd segment bears at the base a series of longitudinal costæ like those at the base of the 2nd segment of *Odynerus*; these are especially visible on the ventral surface.

St. Ann's, Woking:

September, 1899.

BOMBI IN CAPTIVITY, AND HABITS OF *PSITHYRUS*.

BY F. W. L. SLADEN.

Taking nests of humble-bees and keeping them under observation in specially constructed hives has been a hobby of mine for some years, and it is astonishing what a quantity of interesting information one can gather in this way about the habits and life-history of the dozen or so species that have been recorded from this country, several of which are very common and familiar to every one. It appears that each species has habits and proclivities more or less peculiar to itself, and these, if they could be accurately observed and recorded, would help very much in the systematic arrangement of the species, which in this interesting genus is unusually difficult, owing to the lack of easily recognisable structural differences, and to the little reliance that can be placed on colouring.

As a result of taking a number of nests it appears that most of the *Bombi* found in this country may be separated into two groups, on what seems to be a rather important difference in the manner of raising their young. These groups may be conveniently named (1) the "*pouch-makers*" and (2) the "*pollen-storers*." The *pouch-makers* form little pockets or pouches of wax at the side of a wax-covered mass of growing larvæ, into which the workers drop the pellets of pollen direct from their hind tibiæ on their return to the nest from the fields. The *pollen-storers*, on the contrary, store the newly gathered pollen in waxen cells specially made for the purpose, or in old cocoons specially set apart to receive it, from which it is taken and given to the larvæ through the mouths of the nurse-bees as required.

I have ascertained that the following species are *pouch-makers*:—

B. Smithianus, White.

venustus, Smith.

agrorum, Fab. (the "*muscorum*" of old authors).

Derhamellus, Kirby.

sylvarum, L.

Latreillellus, Kirby.

The following are *pollen-storers*:—

B. lapidarius, L.

terrestris, L.

It will be noticed that the *pouch-makers* include roughly the timid species that live in small colonies above the surface of the ground. The "*pollen-storers*," on the contrary, consist of the bolder

species that form larger colonies under the surface of the ground, where they usually choose for their habitation a disused field-mouse's or rat's nest.

The *pouch-makers* in their simple method of feeding their young resemble the solitary bees; the *pollen-storers'* method, which is more complex, more approaches that of the social honey-bees (*Apis*).

Bombus terrestris is a typical *pollen-storer*, on which I have made some experiments which may be worth mentioning.

I have succeeded in "taming" the (females) queens of the race *terrestris* of this species so far as to get them to start making their nests in captivity. So responsive have some of my queens been to constant care and attention that I can hardly doubt this species has a trace of the domesticable nature of its relative, the honey-bee.

On the occasion of the Royal Agricultural Society's Show, which took place at Maidstone towards the end of June this year, I tried the experiment of exhibiting two young living colonies of this humble-bee in a specially constructed 4-queened hive. Each colony consisted of a queen and two or three young workers, with a small nest containing brood in all stages. The vibration of the railway journey from Dover to Maidstone upset them a little at first, but the queens soon returned to their brood and continued to show their usual devotion to it by spreading their bodies over it to keep it warm. (I should have expected any of the *pouch-makers* to have deserted their nest under such trying and artificial conditions). I fed them with honey and water, injected by means of a fountain-pen filler into an empty cell, twice a day. On the second day of the Show the workers were permitted to fly. They were remarkably quick and intelligent in locating the position of their hive, which was set on a table in the bee-tent, and found their way without any difficulty (though with a great deal of what looked like fuss and feigned hesitation) into their hive amongst a crowd of interested onlookers, in which we were able to see them depositing their loads of honey and pollen under the glass. Their good behaviour earned for them a first prize at the hands of the judges of the bee-department. Through the labours of the workers the size of the combs increased considerably by the end of the show week. On the return journey one of the queens was so reconciled to the vibration as to lay a batch of eggs in the train!

The lack of timidity of *B. terrestris*, race *terrestris*, which enables one to do so much with the queens, makes the workers unpleasantly aggressive when their nest is disturbed, and they will boldly attack the intruder on the wing, making free use of their stings like wasps.

None of our other common *Bombi* are so bold as to do this, except sometimes *B. lapidarius* (also a *pollen-storer*). The ordinary honey-bee quietants, such as smoke and carbolic acid, do not seem to have any effect on these *Bombi*, and I have found that nothing less than the deadly fumes from a rag soaked in a solution of cyanide of potassium will reduce a strong nest of *terrestris* to order sufficiently to enable one to examine it.

Another very interesting point of difference between the *pouch-makers* and the *pollen-storers* is the extent to which each are preyed upon by the closely allied inquiline genus *Psithyrus*, and their relation to it.

Two out of the six *pouch-makers* enumerated in the above list are attacked, it is said, occasionally by one species of *Psithyrus*, viz., *Ps. campestris*, which is not common. (I have not bred *Ps. campestris* from any nest, it being rare in my neighbourhood, but I believe that there are good grounds for stating that it does associate with *B. agrorum* and, perhaps, also with *B. Latreillellus*).

On the other hand, each of our two pronounced *pollen-storers*, *B. lapidarius* and *terrestris*, has a *Psithyrus* of its own, *Ps. rupestris* and *Ps. vestalis* respectively, and both of these are common—in some years abundant. *B. terrestris* is sometimes rendered quite uncommon in a district by the attacks of its inquiline, *Ps. vestalis*. It is necessary to know the life-history of *Psithyrus* to understand this.

The female *Psithyrus*, on finding a nest of its host in a suitable stage of existence, stings the queen to death and makes the workers raise its young, which consist of males and females only. The usual and best time for the *Psithyrus* to attack a *Bombus* nest is when a few workers have already emerged, and before the eggs destined to develop into perfect *Bombus* males and females have been laid. The brood then consists entirely of workers, which will continue to hatch and strengthen the working force of the nest for about three weeks after the queen-mother has been destroyed. A *Psithyrus* female that finds a nest of its host in an earlier stage than this endeavours to avoid a combat with the queen until this stage has been reached. Owing to her extra hard integument, which acts as a protective coat of mail, the *Psithyrus* has a great advantage over her adversary, and I have never known a case in which the *Bombus* queen has been the victor. Thus, in a nest attacked by *Psithyrus* the workers raise males and females of the *Psithyrus* in the place of those of their own species.

The *Bombus* queen has often also to defend herself against the attacks of other females of her own species, especially when the nest

is in an early stage. These find the nest that has been commenced, and attach themselves to it, managing to keep on fairly friendly terms with the founder until they have eggs to lay, when a duel is generally fought, which results in one or the other being stung to death. The chief benefit to the species resulting from the attachment of several females to one nest would seem to be in preventing the young from perishing should the real mother by any chance get lost. (A similar provision is apparently made in the case of our social wasps). *B. terrestris* is especially liable to this kind of self-parasitism. From one nest I dug up there were found the remains of no less than twenty females under the nest. The hole leading to the nest was short, with a conspicuous entrance. *B. lapidarius* is also much given to this habit.

This tendency on the part of the females of these *pollen-storers* to join themselves to nests already started somewhat resembles the habits of the *Psithyrus*, and I have noticed an interesting fact in connection with the life-history of *B. terrestris* which seems to furnish a remarkable connecting link between the habits of this species and those of its inquiline *Psithyrus vestalis*.

Bombus terrestris occurs with us in two races, which were long considered (and are still so by some) as distinct species, viz., *lucorum* and *terrestris*. Race *lucorum* may be roughly distinguished from race *terrestris* by the pure white, not tawny, hairs on the apex of the fourth and the following dorsal segments of the abdomen, and by its smaller size. It also appears earlier in the spring than *terrestris*, and lives in somewhat smaller colonies, having milder tempered workers. From observations extending over some years made in the neighbourhood of Dover, I have found that the nests of *lucorum* are not liable to the attacks of any *Psithyrus*, but that they are frequently attacked by the queens of its sister race, *terrestris*, which, on finding the nest in suitable condition will kill the *lucorum* queen and take possession of the nest, getting the young *lucorum* workers to raise its young in the same way that *Psithyrus vestalis* attacks nests of *B. terrestris*; and I believe that in some cases such *terrestris* queens scarcely contribute a grain of pollen to the food of their young. It is clear that the pollen brush on the posterior tibiæ of such *terrestris* females is almost useless to them, and they might almost as well be devoid of it altogether, as is the *Psithyrus*, and become to all purposes a *Psithyrus*. It is remarkable that the old *terrestris* queens become bald in the nest more quickly than other *Bombi*, just as do the *Psithyri*.

With these facts it would not require a very ingenious evolu-

tionist to put forward the theory that the *Psithyri* have sprung from the *Bombi*, with which they areinquilines in the manner indicated. Not only is *Psithyrus* very similar in structure to *Bombus*, but most of its species bear a remarkable colour resemblance to the species of *Bombus* with which they individually associate.

It would be most interesting to ascertain if the relations between the solitary bees and their inquilines, and those between *Vespa rufa*, L., and its inquiline *V. (Pseudovespa, Schm.) austriaca*, Panz., are similar, and could throw any further light on this interesting kind of parasitism between the members of one family.

Ripple Court, Dover :

August 14th, 1899.

Psocus major (Kolbe), Loens, in Co. Wexford.—Amongst some insects just submitted to me by Mr. Beaumont I find a good example of *Ps. major*, captured by him, and labelled "Enniscorthy, 10.9.98." When recording a Norfolk example last month the remark occurred that the species "only wants looking for." Its occurrence in S. E. Ireland quite confirms this. The few specimens taken in this country were not "looked for."—R. McLACHLAN, Lewisham, London : Sept. 19th, 1899.

The use of the stalked eggs of Chrysopa as suggested by Dr. Asa Fitch.—I do not remember to have seen quoted the following remarks on this subject, and yet, as coming from one of the most observant of American entomologists, they deserve being made more widely known. They occur in the "First Report on the Noxious, etc., Insects of the State of New York" (1854), reprint, pp. 75, 76. "In a recent communication I suggested that these eggs are elevated upon pedicels to prevent their being found by the young larvæ of their own kind, which probably would instantly devour them if they were laid upon the surface of the leaves. To ascertain more fully the correctness of this opinion, I sought an egg which was upon the point of hatching, and placed it in a vial; the next day a young aphid lion was found disclosed from this egg. Two freshly laid eggs were now obtained; one of these was placed in the vial elevated upon its pedicel, the other was laid upon the surface of a leaf in the vial. Next morning the latter was found flattened, and with only a small portion of fluid remaining in one end, and the plump size and green tinge of the young larva showed plainly that he had appropriated the missing contents of the egg to himself, and in a short time he approached the egg, and inserting his jaws into it, wholly exhausted it of its remaining contents under my eye. We thus see that the young aphid lion will devour the eggs of its own species if they are placed within reach. Is it not wonderful that the female knows this fact when no other insect possesses the knowledge? It would seem as though she had a recollection of what her own habits were in the larva period of her life." I am not at all sure that Dr. Fitch's suggestion would meet with approval at the present day: it is ingenious to say the least. Cannibalism is probably the rule in aphidivorous

insects. I have repeatedly seen the larvæ of *Coccinella bipunctata* engaged in extracting the juices of newly formed pupæ of their own species. But no doubt they are appropriated by many other larvæ, just as are the eggs of *Chrysopa* if they can be obtained. In *Hemerobius* the eggs have only the rudiment of a stalk, yet it is hardly possible to doubt that what obtains in *Chrysopa* obtains equally in *Hemerobius*.—ID.: May, 1899.

Drepanopteryx phalanoides at Windermere.—On June 6th last I obtained a specimen of *Drepanopteryx phalanoides* by beating the bushes over a little stream at the back of Bowness, Windermere. I exhibited this, with other insects from that district, at the North London Natural History Society's Meeting, September 7th. —F. MILTON, 7, Chilton Street, Bethnal Green, E.: September 20th, 1899.

Lycæna Argiolus in a South London suburb.—On August 1st I had an unexpected but certainly welcome visitor. Sitting at work at the table the shrubs outside seemed brightened by the active movements of a "blue" butterfly, which was recognised as a perfectly fresh male of *L. Argiolus*, and which settled on a privet bloom within three yards of the window. On the 4th there was another, on the 10th still another, and day after day a casual specimen has fluttered about the limes. They must surely have been bred at no great distance, yet I know of no locality for the species within some miles.—C. G. BARRETT, 39, Linden Grove, Nunhead: August, 1899.

[*L. Argiolus* was to be seen, practically every year, in varying numbers, in Lewisham "Village," which is scarcely more "suburban" than Nunhead. The attraction was the ivy on an old house lately pulled down. I have heard of its occurrence *this* year, not far off, but have not seen it myself. I do not think the late Mr. Stainton used to find it at "Mountsfield," notwithstanding the quantity of holly in his grounds. Does the larva feed upon the flowers or "grapes" of *Ampelopsis Veitchii*? I think this by no means improbable, and if it be so we may look for an increasing quantity of this pretty "blue" in the London suburbs.—R. McLACHLAN].

Colias Hyale, &c., in the Isle of Sheppey.—The exceptionally hot and brilliant weather of August seems to have been highly favourable for *Colias Hyale*, which has been observed here in larger numbers than in any season since the equally torrid summer of 1893. A much damaged ♂ was taken by a local collector on the 20th, and about a week afterwards I saw at least a score in the lucerne fields during a morning's walk on our cliffs. These were nearly all males in beautiful fresh condition, but the intense heat rendered them even more lively and unapproachable than is the wont with *C. Hyale*, and it was not without difficulty that I was able to secure half a dozen specimens. On September 3rd, a later date than I have ever before observed the species in England, it was still on the wing in good condition, although scarce.

This year *C. Hyale* has quite outnumbered its congener *Edusa*, of which I have as yet seen only one worn ♀, and have heard of no more than two or three others.

as having been noticed. This appears usually to be the case, at all events in this district, in those seasons when *C. Hyale* occurs at all; it was notably so in the great "Hyale year," 1868, and again in 1872, 1875 and 1893; the exception being in 1892, when *C. Edusa* abounded here, but only a very few *C. Hyale* were taken.

Pyrameis Atalanta is rather more common than usual, and fresh examples of *P. cardui* have been noticed, but this species has not been plentiful at any time during the present season; while of *Vanessa Io*, formerly one of our commonest butterflies, but for some years past quite a rarity, not one has been observed in any stage as far as I can ascertain.

The present year is quite an exceptional one for *Macroglossa stellatarum*, of which hibernated (or ? immigrant) specimens were frequently seen in June, and later on the larvæ were to be found not rarely on *Galium verum* growing by the roadsides. By the middle of August the moth was again on the wing, more numerous than in any year since 1868, and indeed so commonly as to attract general attention from non-entomological people.

Worn specimens of *Nomophila noctuella* (*Stenopteryx hybridalis*), another moth which I strongly suspect is largely recruited in England by immigration from abroad, were also frequently met with in June, and the new brood is now plentiful. A few days ago I was greatly pleased to see *Heliothis armiger* in good condition, flying very actively in bright sunshine among lucerne, and was lucky enough to secure it after a hard chase; this is the first example of the species which has come under my notice in the Isle of Sheppey since 1872, in which year I took a ♀ specimen on ivy bloom in October.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: September 8th, 1899.

Colias Edusa, Fab., in the Isle of Purbeck.—Whilst at Corfe Castle for a few hours on the 15th inst. I saw an example of *Colias Edusa* flying along the side of the high road in the bright sunshine. Perhaps, in some parts of the south coast, this has been no uncommon sight this season, but to me it was a particularly welcome one, because I have had no opportunities for outdoor collecting, and it is the only specimen of *C. Edusa* that I have observed this year.—EUSTACE R. BANKES, The Close, Salisbury: August 24th, 1899.

Epischnia Bankesiella, Rdsn., in the Isle of Purbeck.—It is very satisfactory to be able to record the occurrence in the Isle of Purbeck of *Epischnia Bankesiella*, which had previously only been found in Portland and at Lulworth. All three localities are on the south coast of Dorset, and the insect has never yet been found elsewhere. Acting on information about the food-plant, *Inula crithmoides* (vide ante p. 210), kindly given me by Mr. Nelson M. Richardson, I last year succeeded, after much fruitless searching, in finding some larvæ and breeding the imagines. The food-plant is decidedly local, and I believe that, even when the stations where it grows have been thoroughly searched, the insect will prove to be very much more so. The species and its life-history have been fully dealt with and beautifully illustrated by Mr. and Mrs. Richardson respectively in vols. x, xv and xix of the "Proceedings of the Dorset Natural History and Antiquarian Field Club."—ID.: Sept., 1899.

Plusia moneta, Fab., at Cuckfield.—A good specimen of this fine species has been taken by Miss A. Edwards at Cuckfield. It came to light in the house on July 17th. Miss Edwards describes its flight as very slow and fluttering.—E. N. BLOOMFIELD, Guestling Rectory, Hastings: August 25th, 1899.

Unusually large specimens of Liparis dispar.—This season my specimens of *L. dispar* were unusually large: the females measuring as a rule over three inches from tip to tip, and in one instance, at least, three and a quarter inches; the males were over two inches. The larvæ were fed on very juicy sawfly, and were shut up in air-tight tins until nearly full grown; the tins were cleaned out and refilled with leaves twice a day. To complete their growth they were turned into very large cages; the temperature of the room was generally 80° F. It is curious that my correspondent who sent the ova had bred them continuously from 1895, and had never obtained anything at all like these in point of size.—W. H. TUNLEY, Rowland's Castle: August, 1899.

[These are believed to be of the old British strain.—C. G. B.].

Review.

THE COCCIDÆ OF CEYLON: by E. ERNEST GREEN, F.E.S. Part i, pp. i—xii and 1—103, with 33 plates (1896); Part ii, pp. xiii—xli and 104—169, with 30 plates (1899). London: Dulau and Co.

It is now somewhat over thirty years since Signoret commenced his "Essai sur les Cochenilles," in which he demonstrated by pen and pencil that these to many eyes very unattractive insects, the females of most of which live under a sort of fixed carapace (the "scale") for most of their lives, possessed, when examined microscopically, beautiful structure, and that the outline of the pygidium, with its curious denticulations (together with the spinnerets, &c.), furnished valuable generic and specific characters. For many years Signoret found few disciples, and died before the full effects of his work manifested themselves. We think we may fairly claim that to our venerable colleague Mr. Douglas (now in his 85th year) by his papers in this Magazine, was due the initial movement that has since spread over the whole world by leaps and bounds, and has in several instances (such as *Icerya Purchasi* and *Aspidiotus perniciosus*) occasioned government solicitude, and the establishment of paid official entomologists, whose duty largely it is to look after these apparently insignificant scale-bugs. There are at the present time many workers in this field, and their publications are distributed over nearly every medium, and must number thousands of pages annually, whereas about thirty years ago there was nothing. Prominent amongst the workers at the present day is Mr. E. Ernest Green, the author of the book now under notice. Members of Mr. Green's family have long been associated with Ceylon, and have also been known as entomologists: they saw the ruin of the coffee-trade in the island (by a fungus), and the substitution of tea-planting; it was but natural that our author, as an entomologist, and with a knowledge of the disastrous results of the ravages of *Coccida* in other parts of the world, should have watched with much care their effects on the tea-plants, and in so doing his attention has been directed to the group as a whole. Mr. Green, at the solicitation of the Planters' Association, while

retaining his interest in his former occupation, consented to devote himself entirely to watching the insect enemies of the planter, and to devising and testing remedies. In addition to his acquirements as an entomologist, Mr. Green possesses the art of delineating (mostly from microscopical specimens) insects and dissections of insects in an exquisitely delicate manner, and one need only glance over the numerous plates in the book before us to see that the work is that of a master hand, incapable, we might venture to say, of being surpassed, and the figures have been faithfully reproduced by chromo-lithography (most unfortunately the paper for the plates is of a smaller size than the text). The letter-press is of the fullest possible nature, with (in Part i) a concise summary of the general habits and structure of the group. The generic and specific details are complete, and the tables of genera are made to include those not yet found in the island. Mr. Green estimates that about 200 species inhabit Ceylon, many are apparently endemic, others again are cosmopolitan or introduced. Much interesting detail is given on the natural insect enemies of *Coccidæ*, and it was news to us that the larvæ of one of the *Lycanida* (*Spalgis Epius*, Westw.) feed entirely on "mealy bug."

To Part ii is appended a long chapter on remedial measures and insecticides. It is acknowledged that this is largely drawn from American sources, and the author hopes that amongst the remedies some may be found suitable for application in Ceylon should occasion require. Much stress is laid upon the necessity for quarantine, and in this connection it is stated that all the species that have proved noxious in the island have either been certainly imported or are of general distribution. No undoubtedly endemic species has caused any anxiety. Did space permit we would touch upon some curiosities of *Coccid* life in the work before us. Without doubt it is the most important work that has yet appeared on the subject; it is not often one finds scientific attainments and iconographic skill of the highest order so happily combined. Putting on one side the matters of labour and time, the cost of producing such a work is great. It is not too much to ask that naturalists who can afford to subscribe to it will do so, and public libraries should possess it.—R. McL.

Obituary.

Samuel Stevens, F.L.S., F.E.S., died on August 29th, after a few days' illness, in his 83rd year, he having been born in London on August 11th, 1817. In early life it was his ambition to become an artist, and he studied with that intention, but a severe illness compelled him to abandon the idea, and he entered into partnership with his elder brother, John Crace Stevens, who was already established in the well-known auctioneers' business in King Street, Covent Garden; but in 1848 he retired therefrom, and commenced the Natural History Agency with which he was for so many years connected, and which was the medium whereby the enormous collections formed by Bates and Wallace, and many others of scarcely less importance, were distributed. He retired from this many years ago. On the death of his brother, J. C. Stevens, he, for a year or two, again wielded the hammer in King Street, in a honorary capacity, to assist his nephews, who were then rather young to take the whole responsibility of an important business. For many years he has lived in retirement at his house at Upper Norwood, where he died. It is certainly in connection

with the Entomological Society of London that "Sam" Stevens, as he was familiarly called, was best known, and at the time of his death he was (with the exception of Mr. W. B. Spence, the only remaining "Original Member") the oldest Fellow in length of membership. He was elected on November 6th, 1837, and until recently he rarely missed a meeting save during a period of long and serious illness. From 1853 to 1873 he was Treasurer, and a Vice-President in 1885. He took the warmest interest in the Society's welfare all through the many years in which it was in financial low water, and we understand that by his Will he has shown that he retained his desire for its success to the very last. He will scarcely be less missed at the Entomological Club, which only a few years ago he practically saved from extinction. He joined the Linnean Society in 1850. Stevens was scarcely a scientific entomologist. He never put forward any claim to be considered such. He delighted in the society of entomologists of every grade. He was an enthusiastic collector and a thoroughly good observer, not given to literary work, and from this cause he never published much, though there are communications from his pen, mostly consisting of short notes, scattered through the periodicals, etc., for nearly 60 years. In his retirement at Norwood he devoted himself much to horticulture, and he also amassed a valuable series of water-colour drawings. He had a very extensive collection of British *Coleoptera*, and a very valuable one of British *Lepidoptera*, exceptionally rich in rarities and in varieties and aberrations. We believe these are likely to be dispersed. In private life Mr. Stevens was a genial companion, utterly free from petty jealousies. He married somewhat late in life; his wife long predeceased him, and he has left no family. For details of the early life of our late colleague we are indebted to his nephew, Mr. J. S. Stevens, F.E.S., who for a good many years helped him in the agency business.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: August 21st, 1899.—Mr. G. H. KENRICK, F.E.S., in the Chair.

Mr. Kenrick showed a drawer of *Pierines* from Thibet and other parts of Eastern Asia; it included a range of species which showed a transition from the ordinary *Pieris* (*brassicae*) to *Aporia crataegi*, the intermediate stage being particularly marked in *Pieris* (*Mancipium*) *Deata*; also a specimen of *Agrotis Ashworthii* bred from one of two larvæ which were all he had been able to find as the result of a whole day's work at Llangollen; likewise a specimen of *Acronycta menyanthidis* found at Edgbaston, which he said he believed to be the first specimen captured in the Birmingham district. Mr. R. C. Bradley, a specimen of *Acronycta alni* bred from a larva found on mountain ash at Sutton. Mr. H. Willoughby Ellis said that he had had a larva of the same species sent to him this week from Bromsgrove, which was found on maple. Mr. Ellis, the following *Coleoptera*:—*Scolytus destructor* and *multistriatus*; the latter species was found in some logs on the bank of the canal at Kingswood, and had not previously been found in the Midlands; as there was good reason, however, to believe that the logs had been brought to the spot where they were found from some other district, the beetles had probably been brought into the neighbourhood with them. Also *Epuraea deleta* from Knowle, 7/99, and a fine variable series of *Strangalia armata* from Haywood, Warwickshire, taken

this year. Mr. J. W. Moore, insects from the Cambridgeshire Fens—*Leucania straminea*, four bred specimens, which he said were the first specimens of the species which any one had bred; *Leucania obsoleta*, four specimens; a short series of *Senta ulnæ*; and one *Moma Orion* (bred), all in grand condition. Mr. Colbran J. Wainwright, a fine long series (male and female) of *Anthrax paniscus*, taken in Cornwall in July and August last; he said that for the first week or so they appeared to be confined to one spot of sand in a warm protected corner near the beach at St. Ives, where they occurred either settling on the hot sand itself, or on the flower heads of *Daucus carota*; before he left, however, on August 9th he had found them much more generally scattered, especially occurring on the flower heads of *Angelica sylvestris*, but also on other flowers, and he had seen them as far west as the Land's End, and nearly to Camborne in the east; also, for comparison, continental specimens of *Anthrax fenestrata*, *maura* and *morio*, and *Lomatia lateralis*. Mr. G. H. Kenrick gave an account of an experiment he had tried with larvæ of *Amphidays betularia*. He had about two dozen larvæ from a pair of black parents, and when about quarter of an inch long he separated them, putting one lot into a box with entirely white lining, and putting nothing but green food in to them, and the other into an ordinary dirty breeding cage, into which he put a liberal allowance of brown twigs with the food. When full grown all in the white box were of the usual pale green form, in the other box most were dark, one or two being very dark, in colour, but two were pale; at the beginning all colours were mixed in both boxes, so that apparently the pale surroundings had made all the larvæ pale, while the variable surroundings had left the larvæ in that lot variable.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
August 10th, 1899.—Mr. T. W. HALL, F.E.S., in the Chair.

Mr. Malcolm Burr exhibited a large number of species of the Orthopterous family *Eumastacidae*, which he was monographing, and contributed notes on their distribution, with detail drawings by E. H. T. Schuster, Esq., of Oxford; he also showed the specimens of *Orthoptera* which had been brought from Socotra by Mr. Ogilvie Grant, as a portion of the result of the recent expedition. Mr. Sauzé, a considerable number of insects of all Orders taken in Hampshire and Dorset during his recent holiday there.

August 24th, 1899.—Mr. ROBT. ADKIN, F.E.S., in the Chair.

Mr. Edwards exhibited a number of insects of various Orders from Borneo and India, including the large bee, *Xylocopa latipes*, of which the male has paddle-shaped fore legs, the enormous digging wasp, *Triscolia procera*, the giant ant, *Camponotus gigas*, and several remarkable species of *Pompilidae*, together with a large immature *Tarantula*, specimens of the crab spiders, *Gasteracantha*, and the rare genus allied to the scorpions, *Thelyphonus*. Mr. West, three species of *Hemiptera*, *Oncotylus viridiflavus* found on *Centaurea* at Wisley, *Trichopsylla Walkeri* found on buckthorn at Box Hill, and *Serenthia lata* obtained by sweeping at Reigate. Mr. Patteson reported that a specimen of *Deilephila livornica* had been taken at Limpsfield at light. Mr. Adkin showed a series of *Acidalia aversata*, bred from ova laid by a female captured at Lewisham; the whole brood were dull non-banded forms like the female parent, and very distinct from the ordinary light form.—H. J. TURNER, *Hon. Secretary*.

LITHOCOLLETIS CONCOMITELLA, SP. N., AND ITS NEAREST ALLIES.

BY EUSTACE R. BANKES, M.A., F.E.S.

Some three or four years ago an attempt was made by my esteemed friend, Dr. J. H. Wood, and myself to clear up the long-standing confusion of ideas surrounding the apple-feeding species of *Lithocolletis* and their nearest allies: some recent notes by Mr. J. W. Tutt in the *Entomologist's Record*, x, 164—8 (1898), have by no means dispelled it. Dr. Wood's observations and conclusions, based chiefly on a microscopic examination of the male genitalia, and a study of the insects in their larval stages, are set forth in a paper, illustrated by structural drawings, shortly to follow this. His conclusions exactly coincide, except as regards the question of the specific distinctness of *L. pyrivorella*, sp. n., from *mespilella*, Hb., with my own, which are founded on a careful examination of the superficial characters of the imago, and a knowledge of the life-histories of the several species. I have examined large numbers of specimens of all the known British and continental forms, and also, wherever possible, the original types. Appended is a list of the various species under notice, and their synonymy, worked out so as to include the more important references, but it seems impossible to attempt to identify, from their inadequate notices alone, some of the forms mentioned by the older writers, both British and continental; to base any arguments on the association of special names with the figures of special insects, in such works as W. Wood's "Index Entomologicus," would be quite unjustifiable. I wish here to express my hearty thanks to Lord Walsingham and Mr. J. Hartley Durrant for their kind help and advice, particularly with respect to some of the more complex questions of nomenclature.

The well-known name "*pomifoliella*" has been altogether abandoned because Zeller, who first published it, adopting it from Tischer's MS., made his description from a mixed series composed of several distinct species, and afterwards ticketed with the name "*pomifoliella*," indicating thereby that he intended it to be regarded as the type specimen, the *only* example of *cydoniella*, F. (which name is considerably the older), in the series: no doubt it was selected because it is the brightest and most attractive of all the specimens. Among the rest are *blancardella*, F., and *concomitella*, sp. n., but I have failed to identify satisfactorily Zeller's original type specimens of *Lith. pomifoliella*, var. *b* (Lin. Ent., i, 198), *L. pomonella* (Lin. Ent., i, 201—3), and *Lith. pomonella*, var. *c* (Lin. Ent., i, 202), all of which are, in my

opinion, aberrant individuals: they may perhaps be referable to *mespilella*, *spinicolella*, Z., and *faginella*, Z., respectively. In the Stainton British collection the series of "*pomifoliella*" includes representatives of *blancardella*, *oxyacanthæ*, Frey, and other species, while that in the continental collection contains four specimens, two of which, bred from *Pyrus malus*, were received from Professor Fritzsche as "*pomifoliella*" and are *concomitella*, while the other two are labelled by Stainton "Original to Zeller's descr., Zeller 11/50." One of these bears Zeller's MS., label "v. Ti," and appears to be *concomitella*, but the identity of the other seems extremely doubtful.

The nine species here dealt with are, for the most part, very puzzling and difficult to differentiate at first, and it is only by the careful study of long bred series of each than one can hope to grasp the subtle distinctions between them. The general pattern of the markings is alike in all, and consists of a white streak from the middle of the base, and four costal and three dorsal white teeth of various shapes and sizes. Individuals of the same species often vary greatly in size and colour, and to some extent in the exact form of the markings, and aberrations occur, though but rarely, in which two of the costal, or of the dorsal, teeth unite to form one, or in which one of the teeth is divided into two, or is altogether absent. The presence or absence of dark spots on the posterior tarsi is, in some species (e.g. *sorbi*, Frey), a sufficiently constant character to be of great value in helping one to recognise them, though in a few it is quite unstable, and occasional exceptions to any rule must be expected in all. Identifications can therefore only be satisfactory when based upon the combination of special characters found in the individual. The summer broods are, in general, smaller and paler than the spring ones, and continental specimens are generally lighter and brighter than British ones. My comparative notes on all the species, excepting of course *cydoniella*, which is not known to occur in Britain, have been made from series bred from the most southern counties of England only, because northern specimens average so decidedly darker than southern ones that a comparison in colour between the northern form of one and the southern form of another would be very misleading. For example, *sorbi* is, in the south of England, a clean-looking and bright species, whereas the specimens of it that I have examined from Dumbartonshire, N.B., are fully as dark as my darkest examples of *pyrivorella*. Several of the species are by no means confined to only one, or even two food-plants, which has largely helped to increase the

confusion about them. It should be noticed that *cerasicolella*, H.-S., and *spinicolella* fall into a group by themselves, separated from the other species by both larval and imaginal (sexual as well as superficial) characters, by their habit of hibernating as larvæ instead of pupæ, and by the fact that their usual food-plants belong to a different tribe of the Natural Order *Rosaceæ*, viz., the *Pruneæ* as opposed to the *Pomeæ* [cf. Hooker, Stud. Flor. Brit. Isl., ed. 3, pp. 113—4 (1884)].

My attention has been drawn by Mr. Durrant to a *Lithocolletis* described by H. de Peyerimhoff in MT. Schweiz. Ent. Ges., iii, 413 (1872), under the name *cerisolella*, and described again and figured by him in Ann. Soc. Ent. France (ser. 5), ii, 201—2, pl. vi, 11 (1872). He says that the imago is similar in colour to *cydoniella* and the larva feeds on cultivated service ("le sorbier cultivé"), but since the mine is formed on the *upper-side* of the leaf, the species obviously belongs to quite a different group from those here dealt with, *all* of which feed on the *under-sides* of the leaves.

1.—LITHOCOLLETIS CERASICOLELLA, H.-S.

Lithocolletis cerasicolella, H.-S., Schmet. Eur., fig. 784—5 (1852), v, 326—7, No. 1013 (1855); Frey, Tin. u. Pter. Schweiz, 341, No. 14 (1856); MT. Schweiz. Ent. Ges., i, 350, No. 32 (1865); Lep. Schweiz, 413 (1880); Snell., Tijds. v. Ent., xi, 70 (1868), xii, 212 (1869); Vlind. Ned. Microlep., 923—4, No. 21 (1882); Hein., Schmet. Deutsch., Tin., 670, No. 1059 (1876); Shgn., Kleinschmet. M. Brand., 276, No. 522 (1886); Corbett, Ent. Mo. Mag., Ser. 2, iv, 82—3 (1893); Meyr., HB. Br. Lep., 741, No. 22 (1895).

= *Lithocolletis mahalebella*, Mühlig, Stet. Ent. Zeit., xxiv, 212 (1863); Frey, MT. Schweiz. Ent. Ges., i, 351, No. 37 (1865).

= *Lithocolletis cerasicolella*, var. *persicella*, Steudel, JH. Ver. Nat. Württ., xxxviii, 232 (1882).

= *Lithocolletis* [*cerasicolella*] var. *mahalebella*, Hering, Stet. Ent. Zeit., lii, 216, No. 2856, var. (1891).

Larva—in mine on under-side of leaves of *Prunus avium*, *cerasus*, and rarely on their cultivated varieties; also on *P. mahaleb*, *armeniaca*, "*domestica*?" (Sorhagen), mirabel plum (Frey), "wild plum" (Machin), *Persica*, and *Pyrus communis* (Fritzsche), vi, ix—iii. According to Gartner (*teste* Sorhagen), the larva has also been found on *Fagus*, but this is so unlikely a food-plant that I cannot accept the statement without further evidence.

Pupa.—iii—iv, vi—vii. Cocoon distinct.*

Imago.—iv—v, vii—viii.

Broods.—two. Hibernates as full-fed larva inside the mine.

Hab..—ENGLAND, Yorkshire (Doncaster, *H. H. Corbett*), Herefordshire (Tarrington, *J. H. Wood*), Kent (*loc. var.*, *B. A. Bower*, *A. B. Farn*). CENTRAL EUROPE.

Imago.—*Fore-wings* shining, rufous-orange in both sexes; basal white streak very long and slender, slightly wavy, not dark-margined, and very rarely uniting with first dorsal tooth; first dorsal and first costal white teeth particularly long, narrow, and oblique, sometimes uniting to form an acutely angulated fascia. Costal and dorsal teeth for the most part narrowly black-margined internally. Dorsal margin between base and first tooth with a narrow white line or a white spot. A distinct slender black streak at apex. *Exp. al.*, 7.75—8.75 mm. *Posterior tarsi* white, unspotted.

Easily distinguishable from all except *spinicolella*, Z., by the length and narrowness of the white basal streak and of the white teeth. Its rufous-orange colour separates it at once from *spinicolella*.

I have treated *mahalebella*, Mühlig, which is bred from *Prunus mahaleb* on the continent, and is a little darker than *cerasicolella*, as unquestionably a form of this species, because I have failed to find any specific distinctions between them. Frey and Snellen in their later works, as well as Hering, have also treated the former as a variety of the latter.

Steudel, noticing that several specimens, bred from *Persica* at Stuttgart, had the palpi black-tipped, separated them (*l. c.*) under the varietal name *persicella*.

The Stainton continental collection contains several un-named specimens bred from peach, viz., two from Ragonot, four from Peyerimhoff, two from E. Hering, a few bred from apricot, viz., three from Schmid, two from E. Hering, and two bred by Fritzsche from *Pyrus communis*, labelled "*Pyri*, Fritzsche:" all these, together with nine specimens in the Frey collection, labelled by Frey as "*L. spec. dubia*," of which seven were bred from peach and two from mirabel plum ("mirabellen"), are, in my opinion, *cerasicolella*. The hitherto unidentified *Lithocolletis* reared by Machin from "a species of wild plum" (*Entom.*, xiii, 165) is also *cerasicolella*, as shown by an examination of the specimens bred by him.

2.—LITHOCOLLETIS SPINICOLELLA, Z.

Lithocolletis spinicolella, Z., L. E., i, 203—4, Anm. 1 (1846);

* Authors, both British and continental, are in the habit of speaking of some of these species of *Lithocolletis* as making cocoons, and others as making no cocoons. Dr. Wood, however, points out to me that this is not strictly accurate, for all really spin cocoons inside their mines, though some make a distinct, and others a very indistinct, cocoon.

Stn., I. B. Lep. Tin., 271, No. 12 (1854); Nat. Hist. Tin., ii, 136—47, Pl. iii, fig. 2 (1857); Man., ii, 418 (1859); Frey, Tin. u. Pter. Schweiz, 343, No. 15 (1856); MT. Schweiz. Ent. Ges., i, 350, No. 33 (1865); Lep. Schweiz, 413 (1880); Snell., Tijds. v. Ent., xii, 211—2 (1869); Vlind. Ned. Microlep., 924—5, No. 22 (1882); Mill., Cat. Lep. Alp. Mar., 367—8 (1875); Hein., Schmet. Deutsch., Tin., 671, No. 1061 (1876); Shgn., Kleinschmet. M. Brand., 276, No. 523 (1886); Meyr., HB. Br. Lep., 741, No. 23 (1895).

= *Argyromiges pomonella*, Stn., Zool., 1848, p. 2092—3, No. 15, fig. 18.

= *Lithocolletis pomonella (deflexella)*, Stn., Zool., 1851, App. clxx; Stet. Ent. Zeit., 1852, p. 82.

= *Lithocolletis pomonella (spinicolella)*, Stn., Zool., 1851, App. clxx—i; Stet. Ent. Zeit., 1852, p. 82.

= *Lithocolletis pruni*, Frey, Mitt. Nat. Ges. Zür., 1855, 614.

= *Lithocolletis pruniella*, H.-S., Schmet. Eur., v, 326, No. 1011 (1855).

= *Lithocolletis spinisolella (sic)*, var. *conjunctella*, Steudel, JH. Ver. Nat. Würt., xxxviii, 232 (1882). [= *pomonella*, Z., var. *c.*—DENT.]
? = *Lithocolletis pomonella*, Z., L. E., i, 201—3 (1846).

Larva—in mine on under-side of leaves of *Prunus communis* (*spinosa*, L.), *P. domestica*, and their cultivated varieties. vi—vii, ix—iii.

Pupa—iii—iv, vi—vii. Cocoon indistinct.

Imago—iv—v, vii—viii.

Broods—two. Hibernates as full-fed larva inside the mine.

Hab.—ENGLAND, generally distributed and common. SCOTLAND, Perthshire (*teste* Meyrick), Dumbartonshire (Bonhill, *Malloch*). IRELAND, Dublin (*teste* Stainton). CENTRAL EUROPE (including S. France, *teste* Millière).

Imago—*Fore-wings* shining, golden-ochreous, more or less irrorated with fuscous; basal white streak long and slender, slightly wavy, not unfrequently uniting with the first dorsal tooth; first dorsal and first costal teeth long, narrow, oblique, sometimes uniting so as to form an acutely angulated fascia. Costal and dorsal teeth for the most part black-margined internally. Dorsal margin between base and first tooth with a narrow white line or a white spot. A black apical streak. *Exp. al.*, 7—8.5 mm. *Posterior tarsi* white, occasionally dark-spotted above.

Rather smaller than *cerasicolella*, H.-S., and of a totally different colour; otherwise differing from the species that follow in the same points as does *cerasicolella*. For the variety, in which the basal white streak unites with the first dorsal tooth, it seems advisable to adopt

the name *deflexella*, which Stainton, in Zool., 1851, App. clxx, applied to the spring brood in which this form of variation is frequent. Steudel (*l. c.*) proposed the varietal name *conjunctella* for the form in which the first and second dorsal teeth unite to form an arch. Frey, in Tin. u. Pter. Schweiz, 341 (1856), and Snellen, in Tijd. v. Ent, xi, 70 (1868), expressed doubts about *cerasicolella* and *spinicolella* being specifically distinct, but these authors subsequently, the former in Lep. Schweiz, 413—4 (1880), and the latter in Vlind. Ned. Microlep., 923—5 (1882), treated both as valid species, which they unquestionably are.

Stainton, in a copy, which he sent to Zeller, of his "Monograph of the British *Argyromiges*," published in Zool., 1848, pp. 2079—97, 2152—65, wrote, on p. 2092, with reference to his notice and figure (Pl. 2, fig. 15) of *pomonella*, "not *pomonella* but *salictella*." This statement, made at a time when his ideas about these species were being continually modified, is almost certainly erroneous. *Salictella* is not known to have ever occurred in Britain and it is almost inconceivable that, as his Monograph dealt with *British* species only, the description or figure of *pomonella* should have been made from a species *not* occurring in Britain. Moreover, below the description he says "I took this species in plenty last May on the Penge palings," so most probably both the description and figure were made from Penge specimens, and they agree well with *spinicolella*, Z.

3.—LITHOCOLLETIS CONCOMITELLA, *spec. nov.*

= *Lithocolletis pomifoliella*, Z., Is., 1839, p. 218 (*partim*); L. E., i, 196—9 (1846) (*partim*).

= *Argyromiges junoniella*, Stn., Zool., 1848, p. 2095, No. 18, fig. 17 (*nec* Z.).

= *Lithocolletis pomifoliella*, var. *mespilella*, H.-S., Schmet. Eur., Tab. 97, fig. 749 (1852).

= *Lithocolletis pomifoliella*, var. *deflexella*, Steudel, JH. Ver. Nat. Würt., xxxviii, 231 (1882).

= *Lithocolletis pomifoliella*, var. *conjunctella*, Shgn., Kleinschmet. M. Brand, 275, *partim*, ex *Pyrus* (1886).

Antennæ externally pale brownish-grey, narrowly and indistinctly pale-ringed at the joints, internally white. *Palpi* white, externally with a dark fuscous streak towards the apex. *Face* white, faintly and partially golden-tinged. *Head*; tuft on crown brownish-golden mixed with white. *Thorax* and *tegulae* brownish-golden, much marked with white. *Fore-wings* shining, brownish-golden, more or less thickly irrorated with dark fuscous, especially to beyond the middle and between the apices of the white teeth, with a broad straight shining white basal streak, black-

margined along its costal edge, and also beneath its apex, and terminating before the middle, its apex closely approaching, and frequently uniting with, the first dorsal white tooth. There are four costal and three dorsal shining white teeth, broad and conspicuous, internally black-margined, the first costal and first two dorsal ones being also partially black-margined externally. Dorsal margin with a rather conspicuous white spot or line between the base and the first white tooth. At the apex is a black streak. *Cilia* pale brownish-white beyond a conspicuous broad black dividing line running from the fourth white costal tooth round to the tornus; brownish-golden anteriorly. *Exp. al.*, 8.5–9 mm. *Hind-wings* satiny-grey; *cilia* pale ochreous-grey. *Abdomen* above grey, with grey anal tuft, in the ♂, greyish-brown, with ochreous anal tuft, in the ♀; much paler beneath. *Posterior tarsi* whitish, strongly dark-spotted above.

Type, ♂ ♀ (selected from a long series bred from *Pyrus malus* at Corfe Castle). Mus. Bankes.

In a common form of this species, to which the varietal name *deflexella* was applied by Steudel (*l. c.*), the end of the white basal streak unites with the upper part of the first dorsal white tooth: it sometimes happens that this is the case on one fore-wing, but not on the other. About 40 % of my bred specimens, which number about 150, are var. *deflexella* as to both fore-wings.

Larva—in mine on under-side of leaves of *Pyrus malus*, and its cultivated varieties. v—vi, ix—x. I once bred, together with some *spinicolella*, several genuine *concomitella* from mines collected at Corfe Castle in leaves of *Prunus communis* (*spinosa*, L.).

Pupa—vi—vii, x—iii. I have no note about the cocoon.

Imago—iii—iv, vii—viii.

Broods—two. Hibernates as pupa.

Hab.—ENGLAND, generally distributed and common. CENTRAL EUROPE.

Easily separable from all its allies by the breadth of the white basal streak, and of the costal and dorsal teeth, which occupy a larger proportion of the wing-area than in any of them, and by the white spot or line on the dorsum between the base and the first tooth being larger and more constant than in any other species. It may also be distinguished from *pyrivorella*, *n. sp.*, which it most closely resembles in size and colour, by its not showing nearly so much difference in colour between the sexes, though the males are rather darker than the females, and by the white basal streak closely approaching the first white dorsal tooth when it does not, as frequently happens, unite with it, whereas in *pyrivorella* there is practically no tendency towards such union.

Although this species is the *Argyromiges junoniella* of Stainton (Zool., 1848, p. 2095, No. 18, fig. 17), it is totally distinct from the

Lithocolletis junoniella of Zeller (L. E., i, 215, fig. 20), and of Herrich-Schäffer (v, 329, fig. 770), which are identical with *L. vacciniella*, Stn. The series of *concomitella* in the Douglas collection is still labelled "*junoniella*."

Stainton, Zool., 1851, App. clxx, proposed tentatively the name "*pomonella (deflexella)*" for what is now regarded as a variety of the spring brood of *spinicolella*, Z.

Steudel, JH. Ver. Nat. Württ., xxxviii, 231 (1882), proposed the employment of the same name (*deflexella*) for the similar variety of "*pomifoliella*."

He also proposed (l. c. 232) the varietal name *conjunctella*, Stdl., for the form of *spinicolella* in which the first and second dorsal teeth unite to form an arch. [= *pomonella* var. c, Z., L. E., I, 202, ante 241—242.—DENT.].

Sorhagen, Kleinschm. M. Brandenburg, 275 (1886), employed the varietal name *conjunctella* for "*pomifoliella*," as also for an alder-feeding species, probably *alniella*, Z.; he did not use it to indicate the form described by Steudel, but for that to which Stainton had applied the name *deflexella*.

Neither Steudel nor Sorhagen had any intention of naming *species*; they simply indicated the occurrence of parallel variation in more species than one, giving to these homologous variations homonymous names—a perfectly logical proceeding, but one which could in no way affect *special* synonymy.

It is obvious that a new name is wanted for the old "*pomifoliella*." For this species I propose the name *concomitella* (*cum* = with, *comes* = a companion), because it is so often found, on the same apple trees, in company with *blancardella*, F.

4.—LITHOCOLLETIS BLANCARDELLA, Fb.

Tinea blancardella, Fb., Ent. Syst., iii (2), 327, No. 175 (1794); Sppl., 500, No. 106 (1798).

= *Tinea mespilella*, Haw. (*nec* Hb.), Lep. Brit., 576, No. 57 (1828).

= *Elachista cydoniella*, Dup. (*nec* Hb.), xi, 528—9, Pl. 308, fig. 3 (1838)*; Sppl., iv, 307—8, No. CDLXV (1842).

= *Lithocolletis pomifoliella*, Z., Is., 1839, p. 218 (*partim*); L. E., i, 196—9 (*partim*), fig. 15 (1846); Stn., I. B. Lep. Tin., 270, No. 10 (*partim*) (1854); Man., ii, 418 (*partim*) (1859); H.-S., Schmet. Eur.,

* Duponchel's published figure more resembles *pyrivorella*, sp. n., but the original drawing, now in the Merton library, proves that Duponchel's species is the one under notice.

fig. 748 (1852), v, 330, No. 1024 (*partim*) (1855); Frey, Tin. u. Pter. Schweiz, 335, No. 9 (*partim*) (1856); MT. Schweiz. Ent. Ges., i, 350, No. 35 (*partim*) (1865); Lep. Schweiz, 413 (1880); Hein., Schmet. Deutsch., Tin., 667, No. 1053 (*partim*) (1876); Snell., Vlind. Ned. Microlep., 921, No. 18 (*partim*) (1882); Shgn., Kleinschmet. M. Brand., 274—5, No. 518 (*partim*) (1886); Meyr., HB. Br. Lep., 740—1, No. 19 (*partim*) (1895).

= *Argyromiges pomifoliella*, Stn., Zool., 1848, pp. 2093—4, No. 16.

The following description, made from a very long series of specimens bred by Mr. W. H. B. Fletcher from wild apple leaves collected in Hants and Sussex, will probably be useful, since *blancardella* does not appear to have been described in detail in any readily-accessible work.

Antennæ externally pale brownish-grey, narrowly and indistinctly pale-ringed at the joints, internally white. *Palpi* white, externally with a dark fuscous streak towards apex. *Face* white, slightly and partially golden tinged. *Head*; tuft on crown golden-orange mixed with white. *Thorax* and *tegulae* golden-orange, much marked with white. *Fore-wings* shining, reddish golden-orange in both sexes with a straight shining white basal streak, which is black-margined throughout above and often also below its apex, and ends before the middle of the wing, showing no tendency to unite with the first dorsal white tooth: the streak varies considerably in width, being sometimes rather broad, and sometimes decidedly narrow. The four costal and three dorsal white teeth are broad, conspicuous, and strongly lustrous; they are narrowly but distinctly black-margined internally, and the first costal and first two dorsal ones are also partially black-margined externally. There is a distinct black apical streak, and sometimes some black scales lie round the apices of the costal and dorsal white teeth. Dorsal margin generally with a white line or spot between the base and first white tooth. *Cilia* very pale greyish-orange beyond a conspicuous black dividing line running from the fourth costal tooth round to the tornus, reddish-orange anteriorly. *Exp. al.*, 8—9.25 mm. *Hind-wings* satiny-grey, with pale grey cilia. *Abdomen*, above dark brown-grey, with pale grey anal tuft, in the ♂, brownish-grey, with pale greyish-ochreous anal tuft, in the ♀; beneath very much paler. *Posterior tarsi* whitish, sometimes with, sometimes without, dark spots above.

Larva—in mine on under-side of leaves of *Pyrus malus* and its cultivated varieties; also on *P. aria* (J. B. Hodgkinson) and *P. communis* (H. Frey). vi—vii, ix—x.

Pupa—vii, x—iv.

Imago—iv—v, viii.

Broods—two. Hibernates as pupa

Hab.—ENGLAND, pretty generally distributed in the Midlands and South, and certainly occurring as far north as Westmoreland. CENTRAL EUROPE.

Nearest to *mespilella*, Hb., in its bright colour, which, however, is rather less red and more golden, but separated from it by its much larger size. Its much brighter colour in both sexes, and the presence of a white line or spot on the dorsum between the base and the first white tooth, distinguish it from *pyrivorella*, *sp. n.*, and its colour and the absence of any tendency to the union of the basal white streak with the first dorsal white tooth, separate it from *concomitella*, Bnks.

Since this, the brighter of the two common apple-feeding species, may well be the *Tinea blancardella* of Fabricius, it seems advisable to adopt his specific name for it. Seeing that his description was made from English specimens in Yeats' collection, it is clear that the species before him was one that is now well known to us, and the description entirely agrees, in so far as it goes, with the insect under notice. Werneburg, in Beitr. z. Schmet., i, 485, 587, Note 431 (1864), suggests that *blancardella*, Fb., is probably identical with *sorbifoliella*, H.-S. (= *sorbi*, Frey), but this seems to me quite unlikely, for English examples of *sorbi*, except from the south, are not "golden," and I doubt the occurrence, in Fabricius' day, of this species in the south, where I should imagine that its food-plants, *Pyrus aucuparia* and *Prunus padus*, were then almost, or altogether, unknown.

Haworth's original specimen, which I found in the Allis collection in the York Museum, bearing his own MS. label "*mespilella*," and from which his description in the "Lepidoptera Britannica" was taken, proves that his *Tinea mespilella* is identical with the species here introduced as *blancardella*. Unquestionably identical with it also is the *Lithocolletis*, bred from mines found on a single tree of *Pyrus aria* at Windermere, to which the late Mr. J. B. Hodgkinson gave the MS. name "*pyriariella*" (*sic.*): his representative specimen alluded to in the Ent. Record, x, 165 (1898), is now in the Merton collection, and happens to be an interesting aberration in which the third white costal tooth on both fore-wings is obsolete, but is perfectly normal in every other respect. Lord Walsingham tells me that a specimen in Zeller's series of *sorbi* has the same peculiarity, and is obviously the same species as Hodgkinson's.

5.—LITHOCOLLETIS OXYACANTHÆ, Frey.

Lithocolletis oxyacanthæ, Frey, Tin. u. Pter. Schweiz, 336, No. 10 (1856); MT. Schweiz. Ent. Ges., i, 350, No. 34 (1865); Lep. Schweiz, 413 (1880); Hein., Schmet. Deutsch., Tin., 668, No. 1054 (1876); Snell, Vlind. Ned. Microlep., 920, No. 17 (1882); Shgn., Kleinschmet. M. Brand., 275, No. 519 (1886).

= *Lithocolletis pomifoliella*, Stn., I. B. Lep. Tin., 270, No. 10 (*partim*) (1854); Man., ii, 418 (*partim*) (1859); Meyr., HB. Br. Lep., 740—1, No. 19 (*partim*) (1895).

Larva—in mine on under-side of leaves of *Cratægus oxyacantha*; also, but sparingly, on *Pyrus aucuparia* (teste J. H. Wood). Two specimens in Frey's collection are indicated as having been bred at Zürich from a foreign ("exot.") *Cratægus*. vi—vii, ix—x.

Pupa—x—iv, vii. Cocoon indistinct.

Imago—iv—v, viii.

Broods—two. Hibernates as pupa.

Hab.—ENGLAND, generally distributed and common. CENTRAL EUROPE.

Imago.—*Fore-wings* shining orange-fuscon in the ♂, brownish-orange in the ♀; basal white streak of moderate length and breadth, black-margined above, rarely uniting with first dorsal tooth; first dorsal white tooth broad and conspicuous. Costal and dorsal teeth internally black-margined, often with some black scales clustered round their apices. Dorsal margin between base and first tooth generally with a narrow white line, or small white spot. A black apical streak. *Exp. al.*, 6.5—8 mm. *Posterior tarsi* generally more or less dark-spotted, sometimes plain.

Smaller and much darker than *blancardella*, F., but rather similar in colour to *pyrivorella*, sp. n., though separated from it by its much smaller size, and from both it and *mespilella*, Hb., by its generally having a white line or spot on the dorsal margin near the base. It is more orange and less golden than *sorbi*, Frey, and usually has the posterior tarsi dark-spotted, whereas *sorbi* almost invariably has them unspotted.

Though never previously recorded as British under this name, Frey himself recognised *oxyacanthæ* as such some years ago, for the series in his collection includes five specimens sent him from England by Stainton, who, in common with all other British authors, did not allow that *oxyacanthæ* was specifically distinct from the other species confused by him under the name "*pomifoliella*."

[5^{bis}.—LITHOCOLLETIS CRATÆGELLA, Clem.

Lithocolletis cratægella, Clem., Pr. Ac. Nat. Sc. Phil., XI, 319, 324 (1859); XII, 208 (1860); Stn., Tin. N. Am., pp. xiv, 66, 76—7, 141 (1872); Chamb., Can. Ent., III, 55, 108, 166 (1871); V, 50, 186 (1873); VI, 150 (1874); XI, 73—4 (1879); Cin. Qr. Jr. Sc., I, 199, 206, 211 (1874); Bull. US. GG. Surv., IV, 100—1, 111, 112, 154 (1878); Pack., US. Dept. Intr. (Ent. Com.), Bull., VII, 134, 135, 136 (1881); US. Dept. Agr. Rp. Ent. Com., V, 528, No. 16, 534, No. 5

(1890); Brunn, Rp. Cornell Exp. Stn. (Dp. Ent.), II, 148—50, Pl. V, 1—1*d*. (1883); Hgn. Pap., IV, 152 (1884).

= *Lithocolletis deceptusella*, Chamb., Can. Ent., XI, 73—4 (1879); Hgn., Pap. IV, 152 (1884).

= *Lithocolletis pomifoliella*, Wlsm., Tr. Am. Ent. Soc., X, 202 (1882); Ins. Life, II, 119 (1889); III, 328, No. 19 (1891).

Larva—INF. *Cratægus tomentosa*; *Cydonia japonica*, *vulgaris*; *Prunus americana*; *Pyrus coronaria*, *malus*, *serotina*. IX—X.

Imago—III—V.

Hab.: UNITED STATES, Kentucky, Missouri, Pennsylvania.

In the Transactions of the American Entomological Society I sunk *cratægella*, Clem., as a synonym of *pomifoliella*, Z., at a date (1882) when several species were included under this name.

The species resembles very closely the smaller form known as *oxyacanthæ*, Frey, but having only a single specimen and a rough figure of the type, I am not in a position to determine how many species are included in "*cratægella*," or whether any of the species recognised by Mr. Bankes are identical with species bred from *Cratægus*, *Cydonia*, *Prunus*, and *Pyrus* in the United States. Under these circumstances it would seem advisable to restore Clemens' name *cratægella* to the American List until it can be more safely identified or proved to be distinct.—WALSINGHAM.]

6.—LITHOCOLLETIS PYRIVORELLA, *spec. nov.*

Antennæ externally pale brownish-grey, narrowly and indistinctly pale-ringed at the joints, internally white. *Palpi* white, externally with a deep fuscous streak towards the apex. *Head*: face white, slightly and partially golden-tinged; tuft on crown orange-fuscous mixed with white in the ♂, brownish-orange mixed with white in the ♀. *Thorax* and *tegulae* orange-fuscous or deep orange, striped with white. *Fore-wings* shining, deep fuscous, more or less orange-tinged in the ♂, brownish-orange in the ♀, with a rather broad straight shining white basal streak, black-margined along its costal edge and also beneath its apex, not reaching to the middle, and rarely showing any tendency to unite with the first white dorsal tooth. There are four costal and three dorsal, rather broad, shining white teeth, all black-margined internally, while the first costal and the first two dorsal ones are also partially black-margined externally. Towards the apex are some blackish scales between the apices of the white teeth, and there is a black longitudinal streak at the apex: these characters are much less noticeable in the ♂ than in the ♀, because in the former the whole wing is so dark in colour. *Cilia* very pale ochreous-grey beyond a conspicuous broad black dividing line from above apex to tornus; more smoky-brown (in the ♂), or orange (in the ♀) anteriorly. *Exp. al.*, 8—9 mm.

Hind-wings satiny-grey, cilia pale grey. *Abdomen*, and anal tuft, dark greyish-

brown above, much whiter beneath, in the ♂; abdomen greyish-brown, anal tuft greyish-ochreous, both much paler beneath, in the ♀. *Posterior tarsi* whitish, dark-spotted above.

Type—♂, ♀ (selected out of about 300 specimens bred from cultivated pear trees at Corfe Castle Rectory), Mus. Bankes.

Larva—in a short mine on under-side of leaves of *Pyrus communis* and its cultivated varieties; also found by myself at Corfe Castle plentifully on *Pyrus malus*, and sparingly on *P. aucuparia*. v—vi, ix—xi.

Pupa—vi, x—iii. I have no note about the cocoon.

Imago—iii—v, vi—viii.

Broods—two. Hibernates as pupa.

Hab.—ENGLAND, Dorset (Corfe Castle, abundant, *E. R. Bankes*), Herefordshire (Tarrington district, scarce, *J. H. Wood*), Sussex (Bognor and Worthing, scarce, *W. H. B. Fletcher*). I have failed to find, in the continental collections examined, any individuals that can be referred to this species.

Nearly allied to *mespilella*, Hb., but considerably larger (8—9 mm., as against 6·5—7·5 mm.), and very much darker, *mespilella* being, in both sexes, rich reddish-orange, whereas in *pyrivorella* even the ♀, which is far lighter than the ♂, is of a much more dusky orange. Again, in *pyrivorella* there is usually a considerable space between the apices of the first costal and the first dorsal white teeth, and they very rarely unite to form an angulated fascia, whereas in *mespilella* there is a more frequent tendency for these teeth to approach one another nearly, and consequently they unite into a fascia rather more often. Both species can be separated from their nearest allies by the fact that the white teeth are rather broad, clear, and conspicuous, combined with the facts that the basal streak, which is rather broad, is of only moderate length and does not, as a rule, show any tendency to unite with the first dorsal tooth, that there is rarely any indication of a white line or spot on the dorsum near the base, and that the posterior tarsi are, as a rule, dark-spotted above.

Dr. Wood, failing to find any reliable distinctions between the larvæ or the male genitalia of *mespilella* and *pyrivorella*, is inclined to regard the latter as a phytophagic race of the former. Whilst quite admitting that *pyrivorella* may have originated thus, the imaginal differences between it and *mespilella*, both in size and colour, and to a less extent in tendency of markings, are quite as strongly marked among specimens bred from larvæ found feeding *at large* on the same *individual* tree, as between those bred from different food-plants;

these differences are now so permanently fixed, that the treatment of *pyrivorella* as specifically distinct seems to me not only justifiable, but clearly expedient.

7.—*LITHOCOLLETIS MESPILELLA*, Hb.

n. syn. = *torminella*, Frey.

Tinea mespilella, Hb., Sam. Eur. Schmet., Tin., Pl. 39, fig. 272 (c. 1803).

= *Chrysoesthia mespilella*, Hb., Verz. bek. Schmet., 422, No. 4113 (1826).

= *Lithocolletis torminella*, Frey, Tin. u. Pter. Schweiz, 340, No. 13 (1856); MT. Schweiz. Ent. Ges., i, 350, No. 30 (1865); Lep. Schweiz, 414 (1880); Stn., Ent. Ann., 1857, p. 109; Nat. Hist. Tin., ii, 128—35, Pl. iii, fig. 1 (1857); Man., ii, 418 (1859); Hein., Schmet. Deutsch., Tin., 668—9, No. 1056 (1876); Snell., Vlind. Ned. Microlep., 904 (1882); Shgn., Kleinschmet. M. Brand., 342, No. 226 (1886); Meyr., HB. Br. Lep., 741, No. 20 (1895).

? = *Tinea cydoniella*, Haw., Lep. Brit., 575, No. 51 (1828).

? = *Lithocolletis pomifoliella*, var. *b*, Z., L. E., i, 198 (1846).

Larva—in a short mine on under-side of leaves of *Pyrus aria*, *aucuparia*, *tormalis*, and *cydonia*. vii, ix—x. Frey (Lep. Schweiz, 414) adds "*Amelanchier*" and "*Cotoneaster*," and by sleeving out a pair of moths, bred from *P. aucuparia*, on a cultivated pear-tree, I reared a brood from it. In Ent. Ann., 1862, p. 139, *mespilella* is recorded, under the name "*torminella*," as having been bred by Mr. McLachlan from larvæ found mining Morella cherry leaves at Exeter, and Lord Walsingham and Mr. Durrant, who have seen one of the bred specimens, agree that it is *mespilella*.

Pupa—vii—viii, x—iv. I have no note as to whether the cocoon is distinct or the reverse. Sorhagen (*l. c.*) describes the pupa as "without a cocoon," Corbett (Ent. Rec., x, 169), as "with a cocoon."

Imago—iv—v, vii—viii.

Broods—two. Hibernates as pupa.

Hab.—ENGLAND, Devon (Exeter, *R. McLachlan*), Dorset (I. of Purbeck, *C. R. Digby*, *E. R. Bankes*), Gloucestershire (Bristol, *teste* H. T. Stainton), Herefordshire (Tarrington, *J. H. Wood*), Kent (Lewisham, *B. A. Bower*, *H. T. Stainton*), Lancashire (Manchester, *teste* H. T. Stainton). CENTRAL EUROPE.

Imago.—*Fore-wings* rich reddish-orange in both sexes, though the males naturally tend to be a little darker than the females; basal white streak of moderate length and breadth, rarely showing any tendency to unite with the first dorsal tooth.

The white teeth are very lustrous, conspicuous, and moderately broad; they are narrowly black-margined internally, and the first costal and first two dorsal ones are also partly black-margined externally. Dorsal margin generally without any white line or spot near the base; when present it is reduced to a minimum. At the apex is a black streak. *Exp. al.*, 6.75—7.75 mm. *Posterior tarsi* dark-spotted above, as a rule, occasionally plain.

Very similar in colour to *blancardella*, F., but much smaller in size. It closely resembles *pyrivorella*, Bnks., in the character and shape of the white markings, in the basal streak rarely showing any tendency to unite with the first dorsal tooth, and in the absence of a white line or spot on the dorsum near the base, but is so much smaller and brighter that they are separable at a glance. The posterior tarsi, usually strongly dark-spotted, are occasionally unspotted, and no doubt Frey's remark (*Tin. u. Pter. Schweiz*, 340), that they are either dark-spotted or plain, is due to the fact that the first specimen in his series has them unspotted, and the next two have them less distinctly spotted than the rest.

I have treated *L. torminella*, Frey, as identical with *Tinea mespilella*, Hb., on the following evidence submitted to me by Mr. Durrant. Hübner's coloured figure, though not good enough to identify with certainty, clearly represents a *Lithocolletis*, which, presumably, was known to him to feed on *Mespilus*, or he would not have named it *mespilella*. The only two species known to us to feed on *Mespilus* are *corylifoliella*, Hw., and *torminella*, of which Frey bred the former from upper-side, and the latter from under-side mines in leaves of *Mespilus amelanchier*. In *Lep. Schweiz*, 414—5, Frey records this, under the name "*Amelanchier*," as a food-plant of these species, and a MS. note of his, lately found by Mr. Durrant among Stainton's papers, supplies full details about his rearing them from it. We are therefore justified in assuming that either *corylifoliella* or *torminella* is identical with *mespilella*, Hb., but since Hübner's figure is certainly not meant for *corytifoliella*, it is probably intended to represent *torminella*, and moreover it agrees as well, or better, with this than with any other species.

(To be concluded next No.).

ON THE CLAIMS OF *DASYDIA TORVARIA*, Hb., AND *MNIOPHILA CINERARIA*, Hb., TO BE CONSIDERED BRITISH SPECIES.

BY C. G. BARRETT, F.E.S.

In the course of study of the *Geometridæ*, as a group, it has become necessary to investigate the claims of the two species, de-

scribed in Mr. Stainton's *Manual* under the names of *Dasydia torvaria* and *Mniophila cineraria*, to a place in the British Fauna. The conclusions arrived at—forced upon me indeed—are not favourable to those claims.

DASYDIA TORVARIA, Hüb., *tenebraria*, Esp.—Mr. Stainton says of this species: "a specimen was taken many years ago at Ballymena, in Ireland, by Mr. Templeton." In the "*Entomologist's Annual*" for 1855, p. 39, he quotes Professor Westwood as to this specimen, and adds that it is enumerated under the above name in Stephens' "*Museum Catalogue*." Professor Westwood's remarks, in a footnote to page 67 of vol. 2, Humphrey and Westwood's "*British Moths*," are as follows:—"Many years ago my friend Templeton showed me a black Geometrideous moth much larger than *M. chærophyllata*, which he had captured on one of the mountains in Ireland, and of which at the time I made a sketch, but which I have unfortunately mislaid. I have seen nothing like the insect in any collection which I have examined. I have since ascertained that the insect is the *Cleogene Peletieraria* of Duponchel. A reduced copy of my sketch will appear in the supplemental plates to the new edition of Wood's "*Index Entomologicus*." Mr. Stainton goes on to say "whether Mr. Stephens or Mr. Westwood is correct in the name given for this species future observation must decide."

But, unfortunately, no such future observation appears to have taken place! Moreover, the specimen taken by Mr. Templeton seems to have disappeared. Mr. G. H. Carpenter, of the Science and Art Museum, Dublin, has obligingly made all possible enquiries for it without result; Mr. Kane knows nothing of it; and Mr. Stewart, at the Belfast Museum, reports that it is not there, and that no information is possessed as to its whereabouts. Nothing remains, therefore, but the reduced figure, in Wood's 2nd edition, of Mr. Westwood's drawing. This figure is scarcely an ornament to the work; it has blunt, rather rounded wings, slate-grey, without markings except that the nervures and margins are black-brown; indeed, without taking into account that it is a *reduced* figure, one would be inclined to guess that it represented one of the black varieties of *Fidonia atomaria*, except that the antennæ are weak and threadlike.

The genuine *D. torvaria*, = *tenebraria*, is a robust looking insect, shaped very much as *D. obfuscaria*, of about the same size; and with strongly pectinated antennæ in the male; its ground-colour varies from rich umbreous to brown-black, its first and second transverse lines are black, much indented, and often enclose a band darker than

the ground-colour. To this insect Westwood's figure bears no resemblance in shape, colour, or markings! *Cleogene Peletieraria* does resemble it a little in colour, and in the darker nervures and absence of other markings; but has no resemblance whatever to it in shape, which indeed is, like the other, very much that of *D. obfuscaria*! It can only be supposed that neither Stephens nor Westwood was, at the time when they suggested a name for the species, at all acquainted with either *torvaria* or *Peletieraria*, and that both relied upon insufficient descriptions. Both species (European) are, fortunately, now to be seen in the National Collection by continental specimens.

It seems hardly sufficient to prove what Mr. Templeton's specimen was *not*, and to leave the matter in that unsatisfactory state; and I am disposed to suggest that the specimen may possibly have been a black variety of *Tephrosia biundularia*—perhaps the earliest indication extant of that melanic movement which has now become so celebrated!

MNIOPHILA CINERARIA, Hüb.—Of this species Mr. Stainton says in the *Manual*:—"Once at Tenby, South Wales." In the "*Entomologist's Annual*," 1855, however, he calls it *Tephronia corticaria*, W. V., adding, "first enumerated as British in Doubleday's Catalogue, p. 17; a specimen is in the collection of the British Museum, ticketed by Dr. Leach as having been taken by him at Tenby."

It is, perhaps, hardly necessary for me to say that during the seven or eight years which I spent in Pembrokeshire, visiting Tenby every few days, one of the things to which I more especially devoted my attention was, if possible, the re-discovery of this species; and so thoroughly was I satisfied of its absence that I came at last to the conclusion that the insect which Dr. Leach had taken was simply *Gnophos obscurata*, in the smooth grey variety prevalent there.

But this conclusion is totally upset by an inspection of the original specimen, which happily is still in the National Collection, quite safe in the cabinet of the late Mr. J. F. Stephens, and in fair condition. It had been pinned with some kind of large pin, which is now cut off, apparently it was a common English "spit." But, unhappily, the specimen is not *cineraria*—or *sepiaria*, as Staudinger calls it—at all. It is *Tephronia cremiaria*, Freyer; of this there is not a shadow of doubt, the second line of its fore-wings, and the central line of the hind, being composed of faint dots, as in the latter species, and not forming actual complete lines as in *cineraria*.

Tephronia cremiaria is an extremely local species, confined apparently to some of the mountains of France, the Tyrol, and possibly Piedmont, and there is not the smallest probability of its having, or

ever having had, a local habitation in these Islands. If Dr. Leach did really capture it at Tenby it can only be supposed to have been a casual and accidental introduction among alpine plants ; but it is far more probable that the captor was not sufficiently careful in labelling his specimens taken here and on the continent.

So far as my own judgment goes, there is not a shadow of a shade of evidence that either of these species has ever possessed a right to inclusion in the British Fauna.

39, Linden Grove, Nunhead, S.E. :

August 12th, 1899.

NOTES ON ASSEMBLING OF MALES OF CERTAIN MOTHS IN CEYLON.

BY E. ERNEST GREEN, F.E.S.

The following facts in connection with the assembling of the males of certain moths in Ceylon may be of interest to entomologists in other parts of the world.

Amongst *Eupterotidæ* I have taken *E. Fabia*, Cram., and *undata*, Blanch., in this manner.

In the family *Lasiocampidæ* the males of *Trabala Vishnu*, Lef., can be constantly taken by exposure of a freshly-emerged female.

Heterusia cingala, Moore, amongst the *Zygenidæ*, is also strongly attractive.

Nearly all the *Lymantridæ* exhibit the same phenomena. In the case of *Lymantria ampla*, Walk., my rooms were for several days besieged by male admirers of the particularly unprepossessing-looking female moth. It was noticeable that they continued to present themselves for several days after she had been impregnated, and even after she had been killed and set. For ten days or a fortnight after the death of the female the males continued to arrive and to flutter round the breeding cage in which she had been confined. *Dasychira Horsfieldi*, Saund., is another *Lymantrid* with very strong powers of attraction.

Though this emanation, whatever it may be, is extraordinarily far reaching, it is unable to penetrate even a thin sheet of writing paper. I kept a female *D. Horsfieldi* for several days, without the advent of a single male, in a glass jar, the mouth of which had been covered with a piece of paper ; but immediately after this paper had been perforated with a few pin holes the males commenced to arrive.

In all the cases noted above the moths were displayed in the verandah of my bungalow.

Ceylon : February, 1899.

A NEW SPECIES OF *STENOSMYLUS* FROM NEW ZEALAND.

BY ROBERT McLACHLAN, F.R.S., &c.

For this very pretty, and apparently very variable, little *Stenosmylus* I am indebted to Mr. G. V. Hudson, F.E.S., who has done, and is doing, much to increase our knowledge of the *Neuroptera* of New Zealand.

STENOSMYLUS STELLÆ, sp. nov.

Of the form and structure of *S. incisus*, McL., and *S. citrinus*, McL., but nearly one-half smaller.

Head and *thorax* (including antennæ and palpi) dull reddish-brown varying to fuscous, the face and basal portion of the antennæ often paler. Pronotum usually darker on the sides, about one-half longer than broad, narrower than the head, the lateral margins nearly parallel, a deep transverse sulcus shortly before the posterior end; it is rather sparingly clothed with somewhat bristly yellowish hairs. *Legs* yellowish, somewhat dingy, with pale hairs; occasionally (especially in the ♀?) the base and apex of the femora and of the tibiae, and the tips of the tarsal joints, are brownish or fuscous. *Abdomen* blackish in the dry insect: in one sex (probably the ♀) at the ventral apex there is a pair of closely applied geniculated and articulated valves clothed with pale hairs; the rest of the abdomen with only a few scattered hairs on the sutures.

Wings—in the anterior the ground colour may be termed pale brownish-yellow (varying much in intensity), in which are large whitish spaces, viz., three large subquadrate spots on the inner margin; a large, badly limited and very irregular discal space beyond the middle of the wing, usually connected with the third spot on the inner margin; and a nearly circular spot below, and slightly beyond, the pterostigma; the spots on the inner margin are separated by dark smoky-brown spaces, and the other pale markings are margined with dark smoky-brown; the inner margin narrowly dark smoky-brown, with whitish interruptions in the excised apical portion; the costal edge is also alternately whitish and dark brown; the pterostigma very dark brown, with a paler spot near its inner end (these markings give the wings a prettily variegated appearance): venation mostly pale, but whitish in the pale spaces, and with the gradate nervules, and some other portions, blackish; costal nervules mostly simple; sector with about nine branches. Posterior wings pale brownish-yellow, without darker markings (except the pterostigma), but with three large whitish spaces, one at the anal angle, one discal beyond the middle, and one below the pterostigma.

Length of body, 9–10 mm. Expanse, 30–32 mm.

Hab.: Wainuiomata River, about 17 miles from Wellington, New Zealand, November, 1898 (*Hudson*, No. 57). I have examined four examples. Named (by request) after Mr. Hudson's little daughter Stella.

Var. CONNEXUS, var. nov.

Differs from the type form in the whitish markings of the anterior wings being absent, but their position is indicated by the dark markings which remain. The

posterior wings are wholly pale brownish-yellow, excepting the dark brown pterostigma.

Hab. : as in the type form (*Hudson*, No. 14+). I have examined two examples.

Var. OBLITERATUS, *var. nov.*

In this form both whitish and dark markings have practically disappeared from the wings (the dark pterostigma always excepted), which are nearly uniformly brownish-yellow (or *vice versa*), the posterior paler. But on the anterior there is usually a faint trace of the pale markings (if examined in a good light), and the excised apical margin is narrowly darker with paler interspaces.

Hab. : as in the type form (*Hudson*, No. 14). I have examined four examples. Mr. Hudson also indicates one example from Mt. Arthur, Nelson, 3600 feet, January, 1889: this I have not seen. In uniformity of coloration this form might be likened to a very diminutive *S. citrinus*.

I see no reason to doubt that all the examples before me belong to the same species. Mr. Hudson is also of that opinion. The forms above described represent extreme and intermediate conditions, which in all probability could be connected in a long series; but it seemed advisable to apply varietal names.

In the falcate wings, and the character of the markings in the type form, there is some resemblance to the North Indian *Osmylus Langii*, McLach., and allied species of *Osmylus* from the same region.

Lewisham, London :
September, 1899.

CRABRO CAVIFRONS, THOM., *C. PLANIFRONS*, THOM., *C. CHRYSOS-*
TOMUS, ST. FARG., AND *C. SAUNDERSI*, n. sp.

BY R. C. L. PERKINS, B.A.

In this Magazine (1899, p. 110) I recorded *Crabro planifrons*, Thoms., as occurring in this country. In this I was in error, for the examples in question do not belong to that species, which, through the kindness of the Rev. F. D. Morice, I have since had the opportunity of examining. Mr. Morice obtained males of *C. planifrons* in Switzerland, and also sent me a female of the same which had been determined by Kohl. Although the specimens which I referred to *C. planifrons* are almost certainly identical with the *Crabro sexcinctus* of Wesm., they apparently require a new name, because the *C. sexcinctus* of Smith is another species, in fact, a rather uncommon variety of the species we know as *C. cephalotes*, such as I have occasionally met with myself. I therefore propose that the species which is new to this country be called *Crabro Saundersi*, in honour of Mr. Edward Saun-

ders, who has not only added many species to the list of British Aculeata, but by his works on this group has so greatly advanced our knowledge of the subject.

Crabro Saundersi is readily separated in the male sex by the fact that the tubercle of the third joint of the antennæ bears some long fine hairs, the tubercles being equidistant from one another. The female is easily known by the wide face, the lateral teeth of the apical margin of the clypeus being very remote from the middle ones, and the basal abdominal segment being dull and densely punctured. The ocelli are arranged almost in an equilateral triangle, as in the species known to us as *cephalotes*, but for which it would be better to adopt the name *cavifrons*, Thom.

The most noticeable characters of the other species, as I observe them, are as follows:—

Crabro cavifrons, Thoms. (= *cephalotes*, Sm., E. Saund. *et auct.*) ♂ with the three basal tubercles of the antennæ strongly and almost equally developed, the distance between the first and second greater than that between the second and third; no long hairs on the tubercle of the third joint. Posterior tibiæ yellow. ♀—lateral teeth of clypeus very near to the middle ones, each being as near to the nearest of the two middle ones as these latter are to one another. Basal abdominal segment not very densely and distinctly punctured. Face less transverse than in *C. Saundersi*. Ocelli in a nearly equilateral triangle.

Crabro planifrons, Thom. ♂—basal two tubercles of the antennæ not strongly developed. Posterior tibiæ black in the examples examined by me. ♀—each lateral tooth of the margin of clypeus less near to the nearest of the middle ones than these are to one another, the lateral teeth prominent. Basal abdominal segment more shining and less closely punctured than in *C. Saundersi*. Ocelli in a triangle, wider at the base than that of the preceding species.

Crabro chrysostomus, St. Farg. ♂—two basal tubercles of antennæ very strongly developed, the following ones small; posterior tibiæ yellow. ♀—ocelli in a triangle, wide at the base. Basal abdominal segment shining and quite sparsely punctured. Each lateral tooth of clypeus rather more distant from the nearest of the middle ones (which are generally ill-developed and hardly more than angles) than these are from one another.

Although *C. planifrons* is not yet known as British, there is hope that it may be found, and perhaps it may even now be included in some collections with *C. cavifrons*, or with *C. chrysostomus*, which the female very greatly resembles. Of the above characters I have not found the disposition of the ocelli very easy to appreciate. The difference between *C. cavifrons* and *C. chrysostomus* in this respect is manifest, but *C. planifrons* seems to be somewhat intermediate, and there seems to be some variation in different examples of the same species. Mr. Morice has informed me in his letters that he finds the same difficulty, and that in some cases actual measurements show the difference in the disposition of the ocelli to be very small indeed.

Cambridge: October, 1899.

TWO SPECIES OF ACULEATE HYMENOPTERA NEW TO BRITAIN.

BY EDWARD SAUNDERS, F.L.S.

COLLETES MONTANUS, Mor., Fedtschenko. Turk. Mellif., ii, 1876, p. 262.

Three males and a female of a *Colletes*, which I believe to be referable to this species, have been taken by Mr. A. A. Dalglish on Irvine Moor, near Glasgow. It is very distinct in both sexes from any of our other species, but it resembles *Daviesanus* in its shining abdomen, and the somewhat sparse puncturation of the basal segment. It is closely allied to a continental species, viz., *alpinus*, Mor., but the ♂ is very distinct from it in the form of the 7th ventral segment, which in *montanus* is produced into two long, parallel-sided, processes, slightly spatuliform at their apices; whereas in *alpinus* the processes are very long and acute, and delicately membranous; the ♀ is distinguishable by the much stronger puncturation of the basal segment of the abdomen, the bright fulvous pubescence of the thorax, and the wider, more transverse, face. It may be briefly characterized as follows:—

♂. Black. Vertex of the head and the thorax above clothed with fulvous hairs, face below the antennæ and thorax beneath, and on the sides of the metathorax, with white; 4th and following joints of the antennæ sub-equal; 3rd shorter than the 4th. Mesothorax shining, largely punctured, wings hyaline, nervures brown, basal area of the propodeum shining, and very coarsely clathrate, legs black; abdomen shining, punctured, the punctures strong but not very close, clothed on the basal segment with long, somewhat sparse, pale hairs, on the others with shorter black hairs, each segment with a rather narrow apical band of pale hairs, segments beneath punctured, 6th ventral simple, not dentate at the sides, with a few erect hairs near the apex, 7th ventral as described above; stipites of the armature with the lacinia in the form of an elongate triangle, concave, pale, and submembranous in the centre, densely fringed with long hairs along the sides and at the apex, sagittæ widened and angularly dilated at the base, as in *marginata*.

♀. Black. Face transverse, but not so wide as in *Daviesanus*, clothed with whitish hairs, vertex and thorax above with bright fulvous, beneath and round the sides with pale whitish. Clypeus very largely and coarsely punctured, and longitudinally rugose, its apex truncate and slightly emarginate, with two little pubescent foveæ just within its margin, cheeks between the mandibles and eyes considerably longer than in *Daviesanus*. Antennæ with the 3rd joint rather longer than the 4th, which, like the following joints, is transverse. Mesothorax shining, strongly punctured, propodeal area shining, strongly clathrate. Abdomen coal black, shining, basal segment rather strongly, but not very closely punctured, clothed with long, pale, almost grey hairs, the 2nd with scarcely any erect hairs, the others with black, the basal segment has a few short white hairs on each side at the apex, but no distinct band; the 2nd has a very narrow band of white hairs at the base and apex, both slightly narrowed in the middle, the 3rd, 4th, and 5th have each an entire

apical band, the puncturation of the 2nd and following segments is close and very fine, beneath finely punctured; each segment narrowly fringed with pale hairs at the sides; legs black, clothed with whitish hairs. Long., 10 mm.

Three ♂ and one ♀ on Irvine Moor, near Glasgow; July 8th, 1899; A. A. Dalglish. I am much indebted to Mr. A. A. Dalglish for adding this species to my collection.

ANDRENA LAPPONICA, Zett., Ins. Lapp., i, p. 460.

This interesting addition to our fauna has been discovered by Mr. H. Elgar at Ightham, in Kent. Formerly we had a *laponica* in our list, but it proved not to be Zetterstedt's species, and, therefore, its name had to be changed to that of *apicata*, Smith. Now, however, the real thing has been found; the specimens which Mr. Elgar took were visiting the flowers of whortleberry early in May, 1895, he only succeeded in taking females, but no doubt he will next year be able to meet with the male. It adds another species for Britain to the perplexing group, which also includes *varians*, *helvola*, *ambigua*, and *fucata*. Of these, *fucata* is the most easily recognised, and *laponica* is more like that species than the others structurally, although in general appearance its ♀ might be easily passed over as a *varians*. The following are its principal characteristics:—

♂. Black. Head and thorax dull, finely and shallowly punctured, face clothed with white hairs, intermixed with black at the sides, labrum shining, not emarginate at the apex, antennæ with the 3rd and 4th joints subequal in length, 5th and following ones rather longer, mandibles with a strong, rather wide tooth at the base externally. Thorax clothed with pale fulvous hairs above, with white on the sides and beneath; wings with the 2nd submarginal cell much narrower than long; abdomen shining, sparsely clothed with pale hairs, 8th ventral segment with the apical process nearly parallel-sided, hairy, scarcely dilated at the apex, legs black, tarsi scarcely paler.

♀. Black, rather stouter than *varians*; face densely clothed with black hairs, labrum convex, round, and shining. Thorax clothed with bright fulvous hairs above, with black at the sides and beneath, second submarginal cell of wings receiving the recurrent nervure close to the apex; abdomen shining, its basal segment very finely and remotely punctured, the basal segments sparingly clothed with pale fulvous hairs, the rest with black; scopæ black, their under-sides and flocous sooty-white.

Ightham, Kent, on whortleberries, May, 1895.

Long., 10 to 12 mm.

The ♂ is exceedingly like that of *fucata*, but the small entire labrum viewed from above, the larger mandibular tooth, and narrower second submarginal cell, will serve to distinguish it, as well as the very differently shaped 8th ventral segment, which in *fucata* is considerably dilated at the base of the apical process, as figured by F. D. Morice, Tr. Ent. Soc. Lond., 1899, pl. vi, f. 8. The ♀ could only be confounded with that sex of *varians*, but it is a slightly stouter insect, the labrum is less transverse and more convex, and the abdomen is much less strongly and less

densely punctured, especially on the basal segment, which is punctured much as in *fucata*. In *varians* this segment is rather coarsely and densely punctured. I have described the ♂ from a continental specimen taken at Simplon in Switzerland, and the ♀ from a specimen kindly presented to me by Mr. Elgar.

St. Ann's, Woking :

October 5th, 1899.

SOME REMARKS ON THE TWO SPECIES OF *DIGLOSSA*, HALIDAY, OCCURRING IN BRITAIN.

BY G. C. CHAMPION, F.Z.S.

The two species of this genus occurring in Britain are generally supposed to differ in the length of the elytra, but after a careful study of a large number of examples, I am convinced that this is a variable character, and common to both of them. The specimens with the elytra nearly as long as the prothorax, and those with very short elytra, are equally incapable of flight, there being a very small scale-like rudimentary wing in the "apterous" forms, and a larger one in the so-called "winged" examples. The latter have all the appearance of winged forms, but in the numerous specimens I have examined, British and French, nothing more than these rudimentary pieces are visible when the elytra are opened.

Mulsant and Rey [Brévipennes, pp. 74—90 (1873)] admit four species of the genus, Ganglbauer and others two only. The two may be separated thus:—

Abdomen not, or very slightly, widening posteriorly, the sixth dorsal segment more sparsely punctured than those preceding; antennæ piceous, paler at the base; prothorax feebly sinuate at the sides towards the base; head, prothorax, and elytra slightly shining *mersa*, Halid.

submarina, Fairm.

Abdomen widening to the apex of the sixth segment, all the dorsal segments closely, minutely punctate; antennæ ferruginous, or fusco-ferruginous, paler at the base; prothorax strongly sinuate at the sides towards the base; head, prothorax, and elytra opaque *sinuaticollis*, Muls. and Rey.

crassa, Muls. and Rey.

Both species vary greatly in size, as well as in the length of the elytra, and some specimens have the head very large, these latter being probably males. Canon Fowler, in his Table (Col. Brit., ii, p. 171), gives the first species, *mersa*, as apterous, but lower down he states that he has found it "on the wing, settling on large pebbles, &c., in the sun, like *Phytosus spinifer*." I cannot help thinking that this is an error of observation, and that the insect *merely* runs about on the stones in the sunshine when the tide is

down, a habit I have often observed in connection with the apterous *Micralymma brevipenne*, though of course it is possible that fully winged examples may occasionally occur. The other comparative characters used by him to separate the two species apply perfectly well.

D. mersa occurs all along the southern coast—Southend, Sheppey, Sandown, Ventnor, Studland (Dorset), Weymouth, Portscatho, Falmouth—as well as at Tenby, Cleethorpes, Hunstanton, the Forth and Clyde districts of Scotland, Ireland, &c. This must be by far the commoner species of the two in Britain.

D. sinuaticollis has been taken freely by myself in Sheppey; by Mr. Walker at Weymouth; and by Mr. Tomlin at Altcar (Lancashire). There is a very small form of it in Mr. Mason's collection, probably found by Haliday in Ireland. The only British record so far appears to be the one by Canon Fowler (Ent. Mo. Mag., xx, p. 168), this being from Ireland (*Haliday*). I have also found it on the French side of the channel, at Cancale, Brittany, and possess specimens from the Ile de Ré.

D. mersa is well figured by Haliday, and there can be no mistake as to which species he described. It may be noted that the two light-coloured apterous species of *Phytosus* differ in a somewhat similar way in the shape and sculpture of the abdomen.

The name *Diglossa*, Haliday (1837), being pre-occupied in Zoology (Wagler, 1832), I here propose to change it to *Diglotta*.

Horsell, Woking:

October 18th, 1899.

MUTILATION OF *CRYPTOPHAGI*.

BY CLAUDE MORLEY, F.E.S., &c.

With a neighbour like Mr. W. H. Tuck, of Tostock, one does not forget the denizens of wasp's nests and their doings; consequently, upon discovering various limbs of some *Cryptophagi* I recently took were lacking, Mr. E. A. Butler's note upon the subject in the Ent. Mo. Mag., xxxii, 89, was at once re-called. I brought the specimens home in their pabulum, and immediately examined it, dropping the insects into boiling water as they appeared; I then carded them for examination, and in this way any opportunity for damage from capture must have been excluded. The result was more interesting than I had anticipated, since the following parts were missing, viewed from above:—

1. Whole of intermediate left tarsus ; three terminal joints of right anterior tarsus.
2. Whole of anterior tarsus, and there only remained a tiny stump of the posterior tibiae on the right ; whole of anterior leg and of posterior leg on the left.
3. Four apical joints of antenna, and whole anterior tarsus on the left ; whole intermediate leg on the right ; both posterior legs.
4. Of the right anterior tibia only the basal third remained.
5. Of the right posterior leg the coxa alone remained, with a tiny stump of the anterior tibia ; on the left the intermediate tarsus was missing, and the posterior leg was amputated near the apex of the femur, which appeared to have healed, the apex of the stump being rounded and deep black towards its extremity.
6. Perfect.
7. Right anterior tibia ; left posterior tarsus.
8. Left posterior tarsus.
9. Apical third of last antennal joint on the left.
10. Perfect.

These *Cryptophagus lycoperdi* were taken from a single *Scleroderma vulgare* (a puff-ball) in Dodnash Woods, near Ipswich, on September 28th, 1899. Their habitat quite precludes, I imagine, the possibility of formidable foes, and it is difficult to believe that an insect, simply immersed in its natural food-stuff, would attack another of the same species if they should happen to meet, though the latter contingency is the only explanation of this wholesale mutilation which presents itself. Eighty per cent. is a very high rate, and one whose effect upon the species cannot be gauged till the functions and percentage of the antennæ alone are ascertained.

This will, however, tend to confirm Mr. Butler's caution of not at once conceding to Mr. Tuck's hypothesis that, in the case of *C. pubescens*, it was the host who caused the damage wrought. It would be exceedingly interesting to note if a parallel obtains in the other species of the genus. *C. scanicus*, for example, is almost invariably to be obtained by leaving a loaf of bread in a wood for a few days. It is of no use examining cabinet specimens, since those found to be damaged would, of course, be excluded, and, even if present, doubts might be entertained whether the injury were not sustained at the time of, or subsequent to, capture.

It seems hardly probable that these small beetles meet in sufficiently awkward situations in a great wasp's nest, or even in the confines of a fungus to warrant this wanton mutilation of one another.

Ipswich : October 10th, 1899.

**COLEOPTERA AT BOAT OF GARTEN, STRATHSPEY,
INVERNESS-SHIRE.**

BY PROF. T. HUDSON BEARE, B.Sc., F.R.S.E.

I stayed in this locality for three weeks in August, from 5th to 25th, and did a good deal of collecting. Owing, however, to the long dry summer this part of Scotland had experienced, and the intense heat, beetles were very scarce, and it was hard work to find anything at all. The Spey was very low, and the Lochs much below their normal level, while all the moss, except in the boggiest spots, was quite dried up. Herbage was parched, with the result that there were numerous heath and forest fires, one around Loch an Eilan doing much damage.

I worked the shingle beds in the river, and the shores of Lochs Garten and Vaa, but chiefly the pine forests lying between the river and Loch Garten.

The following are my most interesting captures, with a few notes on their habitats:—

Of *Geodephaga*, I picked up three *Carabus glabratus*, Payk., none of them at levels above 1000 ft.; *C. catenulatus*, Scop., was very common in rotten boughs and under them, while one *C. violaceus*, L., was noticed taking an evening ramble along one of the roads; on the same road at the same hour of the day three *Cychrus rostratus*, L., were found.

Nebria Gyllenhali, Sch., was common near the water side, and I found specimens only a few feet below the cairn on the Cairngorm, or 4000 ft. up, these had reddish elytra, and did not look immature; at the same level one *Patrobus septentrionis*, Dej., turned up; *P. assimilis*, Chaud., being common around the Loch shores. The fierce heat and drought had made the mountain sides and tops quite useless for collecting; I had, however, several fine climbs in the Cairngorms and their passes, the only drawback to one's pleasure was the intolerable plague of flies, they followed me in thousands right up to the summits.

In the forests *Calathus micropterus*, Duft., was common, and *C. piceus*, Marsh., scarce, while *Pterostichus oblongo-punctatus*, F., and *P. vitreus*, Dej., turned up by odd specimens; in the shingle, *Loricera pilicornis*, F., *Bembidium tibiale*, Duft., *punctulatum*, Drap., and *prasinum*, Duft., were fairly abundant.

I did not work for *Hydradephaga*, and the only specimen taken was *Agabus guttatus*, Payk., caught in my hand in a tiny stream fed from a spring about 3600 ft. up Cairngorm.

Staphylinidae were mostly found under bark of rotten boughs and stumps. *Quedius lateralis*, Grav., common; *Quedionuchus laevigatus*, Gyll., fairly common under bark, but difficult to secure, owing to the speed with which it runs and drops into the moss around. *Leptusa analis*, Gyll., occurred with *Q. laevigatus*, and also *Megacronus analis*, F.; and in moss *Tachinus rufipes*, L., *Philonthus laminatus*, Creutz, &c. Two specimens of *Staphylinus stercorarius*, Ol., were found running

on the roads in the sunshine. On a sandy beach of Loch Garten *Blodius subterraneus*, Er., was common.

In fungoid growth on stumps, *Liodes castanea*, Herbst, *humeralis*, Kug., and *glabra*, Kug., occurred in company, and *Agathidium atrum*, Payk., was taken in a similar habitat. Under chips and sappy refuse around a pine stump one *Sphærites glabratus*, F., was obtained; diligent search in similar spots failed to bring others to light. Under dry bark several specimens of *Thymalus limbatus*, F., were found. Canon Fowler does not record this from Scotland, so perhaps this is a new Scotch record.*

In one part of the wood *Dendrophagus crenatus*, Payk., was fairly numerous in all three stages, larva, pupa, and imago. I bred specimens, and could have taken a large number had I wished for more. This insect has a curious habit of running backwards, which it does with most surprising rapidity; the larva (of which there is a mounted specimen at the Natural History Museum) is also very quick in its movements.

Of *Aphodius depressus*, Kug., *fatidus*, F., *rufescens*, F., and *lapponum*, Gyll., were found, but as a rule only larvæ were to be seen on working for this genus and its allies. *Thanasimus formicarius*, L., occurred in the pine forests, but very sparingly. I worked all dead fallen timber and stumps for Longicorns, but with poor success. *Rhagium bifasciatum*, F., was exceedingly common in its larval and pupal forms, and I bred some. *R. indagator*, Gyll., I found also in its pupal state, each pupa lying on the surface of the hard wood in the centre of a neatly made nest or circular ring immediately under the bark. I bred two specimens, and brought a considerable number south with me in hopes of securing a large series; unfortunately, the day we travelled was one of the hottest of this exceptional summer, 90° F. in the shade, and the intolerable heat and dust of the railway carriage killed them all, in spite of much trouble to keep them moist and cool. No other Longicorns were seen, I was evidently too late for them.

Adimonia tanaceti, L., and *Serica brunnea*, L., were obtained at times, walking along the dusty hot roads.

Of the *Rhynchophora* not many were seen: *Otiorrhynchus blandus*, Gyll., *muscorum*, Bris., and *maurus*, Gyll., the last fairly common, *Hypera punctata*, F., and *Hylobius abietis*, L., all came out of dry moss shaken on paper.

Stripping the bark from some pine logs standing vertically round an unfelled tree disclosed a great number of neatly drilled holes in the solid wood; almost directly the bark was removed the long snout of a weevil appeared at the mouth of each burrow, gently drawing them out, their identity was disclosed, they were *Pissodes pini*, L., and must have occurred in hundreds in these logs; *P. notatus*, F., did not put in an appearance.

A few dead remains of *Pytho depressus*, L., and *Xylita lævigata*, Hel., were all the *Heteromera* that rewarded my persistent search; probably had I been there a month earlier my take would have been much heavier.

King's Road, Richmond,
Surrey: September, 1899.

* *T. limbatus* has been recorded from Rannoch by the late E. C. Rye (Ent. Mo. Mag., iii, p. 65), and from the Tay and Dee districts by Dr. Sharp (Scott. Nat., iii, p. 378).—G. C. C.

Anomala Donovanii, Marsham: *synonymical note*.—Happening to look at the specimens of this supposed British species in the British Museum, referred to by Stephens in his *Illustrations of British Entomology* (Mandibulata, vol. iii, p. 226), I recognised them as belonging to the American *Anomala irrorata*, Blanchard, a name given 48 years after that of Marsham. The original description in Marsham's *Coleoptera Britannica*, p. 44, was drawn up from two specimens found by Donovan at Newton Nottage, in Glamorganshire. Whether these are still in existence I am unable to discover, but the description leaves no doubt as to their specific identity with the two British Museum specimens, of whose origin there is unfortunately no record. All four appear to have been examined by Stephens, and a figure was given by Westwood in his "Introduction." The habitat of the species is North and Central America, and there can be no doubt that its occurrence in this country was due to some accidental circumstance. Fowler, in his "Coleoptera of the British Islands," has conjectured that *Anomala Donovanii* is a rare variety of *A. aenea*, De Geer (*frischii*, Fabr.), but the two have really no close relationship.—GILBERT J. ARROW, British Museum (Natural History): October 7th, 1899.

Hydropori out of water.—On July 31st I found many living specimens of black *Hydropori*, most of them in a perfectly torpid state, in the dried up basin of a moorland hollow, which always contains water in the winter; there were also living examples of *Agabus biguttatus*. Is it not unusual for water beetles to wait in this manner for the winter rain, as their power of flight would enable them to find water in other places?—L. M. BUCKNILL, Thornfield, Bitterne, Southampton: Oct., 1899.

Oberia oculata in Wicken Fen, Cambridgeshire.—On August 13th, during a short visit to Wicken, I was fortunate in capturing three specimens. The first and finest one was obtained by beating sallow, the other two I spotted sitting on sallow, and took by hand. Unfortunately it clouded over, and a cool wind sprang up, and despite further searching no other capture was made.—EDWARD J. NEWILL, Hertford College, Oxford: October, 1899.

Eumolpus Dillwynii, Steph.: *synonymical note*.—At Mr. B. Tomlin's request, Mr. Gahan and I have recently examined the type of *Eumolpus Dillwynii*, Steph., in the British Museum. This insect, which is said to have been captured in S. Wales, has not been identified by modern writers, and it is omitted from the Catalogue of Gemminger and Harold. *E. Dillwynii* proves to be identical with *Scelodonta nitidula*, Baly, the types of which were from Borneo and Singapore, a common Eastern species, occurring also in Sumatra, Penang, Siam, India, &c., and there are also specimens of it in the British Museum, labelled "China." Stephens' description [Illustr., Mand., iv, p. 364, t. 23, fig. 3 (1831)] is accompanied by a coloured figure, and it antedates that of Baly by more than thirty years. His specimen is recorded as having been taken on "July 29, 1820, among herbage on a hedge bank by a path near Penllergare, between Tyrdonkin and Cefnadle." *Eumolpus Badgeri*, Steph., from "Cambridgeshire," still, I believe, remains unidentified.—G. C. CHAMPION, Horsell, Woking: October 10th, 1899.

Captures of Hemiptera at Woking, &c.—*Ceraleptus lividus*, Stein : a specimen of this rare British insect was picked up in the road here on May 25th by Mr. J. J. Walker. *Corizus maculatus*, Fieb. : this species has been confused with *C. parumpunctatus*, Schill., in my collection for some years ; I have taken it twice at Woking, as well as at Fleet, Hants, and in the New Forest, all the specimens being of a bright rufo-testaceous colour, with a row of conspicuous black spots along the sides of the connexivum. *Scolopostethus puberulus*, Horv., and *Monanthia ciliata*, Fieb., Bloxworth, Dorset, in June. *Eysarcoris melanocephalus*, Fabr., *Loxops coccineus*, Mey., and *Strongylocoris leucocephalus*, Linn., Gomshall, Surrey.—ID. : October 10th, 1899.

Acanthosoma tristriatum, &c., at Tring.—During a short visit to Tring at the beginning of September I found *Acanthosoma tristriatum*, Linn., not uncommon on young junipers on the chalk hills at some little distance from the town ; the locality has apparently not before been published for this beautiful species, the delicate pink and green colours of which unfortunately disappear to a great extent when the specimens are dry. On the same occasion *A. hæmorrhoidale* was beaten in some numbers out of hawthorns, while a couple of specimens of *Corimelana scarabæoides* turned up in moss on hedge banks where scattered plants of *Viola* were growing. A single *Zicrona cærulea* occurred under a juniper bush, one *Podops inunctus* at roots of *Helianthemum vulgare* on a hillside, and one *Pentatoma prasina* and numerous *Pantilius tunicatus* by beating hazels in the hedges. *Coleoptera* as a whole were decidedly scarce ; *Cassida hemisphærica* (2) being the best thing in that Order.—F. B. JENNINGS, 152, Silver Street, Upper Edmonton, N. : October, 1899.

Podops inunctus, Fabr., in the Lea Valley.—I swept a specimen of this species in a field bordering the Lea, about five miles from here, on June 11th. I have taken *Podops* in chalk districts and also on sand hills on the coast, but was not aware that it also frequented marshy situations.—ID.

Odonestis potatoaria with malformed tarsi.—Mr. J. R. Malloch has sent up for inspection a very curious instance of malformation in a male *Odonestis potatoaria*, reared by Mr. J. E. Murphy, of Glasgow, from a larva found at Suss, Loch Lomond. In it the left leg of the front pair is branched below the knee, so that it has two tarsi, each with its hooked claw, one a little shorter and less clothed than the other, indeed, neither has the full clothing of scales which, in this species, usually gives the foot so abrupt a termination. The moth is otherwise perfect, and the interesting question, whether the possession of this extra foot would give the creature any advantage in the "struggle of life," is one which apparently will not now be solved.—CHAS. G. BARRETT, Nunhead : September, 1899.

Luffia lapidella, Goetze (= lapidicella, Z.), at Stonehenge, Wiltshire.—On the 18th inst., I bicycled over with some friends to see Stonehenge, and was pleased to find on some of the large stone pillars, that were covered with a minute grey powdery lichen, plenty of cases—empty, of course—of *Luffia lapidella*, which has just been added to the British List by Mr. J. W. Tutt, in Ent. Record, xi, 207-8 (1899), on

the evidence of cases collected by Mr. Nelson M. Richardson and myself in the Isles of Portland and Purbeck, Dorset, respectively. I was previously aware of the occurrence of the species at Stonehenge, for the Rev. F. O. P. Cambridge sent me for identification some cases from there a few years ago, when I could only tell him that the same insect occurred on rocks on the Dorset coast, but its name was unknown to me. My first acquaintance with this species, which was erroneously recorded as "*Solenobia triquetrella*, Fisch.," by Mr. C. W. Dale, in Lep. Dors., p. 47 (1886) (where he adds, "In the 'Lepidoptera of the Isle of Purbeck,' *Xysmatodoma melanella*, Haw., was recorded in mistake for this species," though in reality *X. melanella* was not recorded at all in the Lep. Purbeck!), and then by myself in Lep. Purb., Suppl. i, p. 10 (1889), was made in June, 1885, when cases were found by the Rev. C. R. Digby and myself on rocks and stones on the Purbeck coast. Shortly afterwards we found the cases on rocks at Portland, but having never bred the male imago from any cases collected, we did not attempt to work out the identity of the insect, which, thanks to Mr. Tutt, has now been satisfactorily established. Mr. Luff has met with the species plentifully in Guernsey, and both sexes have recently been bred in England from cases collected by him there (*vide* Ent. Rec., l. c.). *Lapidella* has been included by recent authors in the genus *Talaporina*, but Mr. Tutt has just announced, in Ent. Rec., xi, 191 (1899), that it is wrongly placed there, and that he intends, in his next volume of the "British Lepidoptera," to describe a new genus, under the name "*Luffia*" for it. I have, therefore, adopted his proposed generic name, although no definition of the genus has yet been published.—EUSTACE R. BANKES, The Close, Salisbury: Aug. 25th, 1899.

Rapid completion of the metamorphoses of Camptogramma fluviata, Hb.—On July 17th last a fine male specimen of *Camptogramma fluviata* was taken at electric light in the pantry here by our butler, Mr. G. Skinner, and on the following night he secured a female, also at light, in the same place. The latter obligingly began to oviposit on July 19th, and, before she died on the 21st, had laid nearly 30 eggs, of which the first hatched out on the 24th, and the last on the 25th. The larvæ fed up rapidly on *Polygonum aviculare*, and by August 8th all (except four or five) had already spun their flimsy loose silk cocoons among the stems and leaves of their food-plant: the last larva spun up on the 10th, and pupated during the night of the 11th. Twenty-seven fine moths (16 ♂♂, 11 ♀♀) duly emerged, the first on August 17th, and the last on the 22nd. Thus only 29 days elapsed between the laying, and only 24 days between the hatching, of the first egg and the appearance of the first moth! This seems to me a remarkably short space of time for any insect of such a size as *fluviata* to complete its metamorphoses, especially when the brood was not "forced" in any way: on the contrary, the ova, larvæ and pupæ were kept throughout either in, or on the windowsill of, a cool unheated room, facing north, and away from the direct influence of the sunshine. It should, however, be remembered that the weather during most of this period was very hot.

Of the first sixteen moths that appeared, nine were males and seven were females, from which it will be seen that the sexes came out simultaneously. My notes show that the usual time of emergence is clearly between 7 and 9.30 p.m., though a few emerged at about noon, and two came out between 11 p.m. and 7.30 a.m.

In the hope of rearing another generation this year, I turned down four (2 ♂♂, 2 ♀♀) of the bred moths among some growing plants of *P. aviculare*, and placed the flowerpot in a moderately warm, though unheated, greenhouse, with the happy result that another small brood of larvæ, varying in size from about half-grown down to extremely small, is now feeding up. I have little doubt that "forcing" will have to be resorted to, in order to make the moths emerge this autumn. Such a full account of the larvæ and their habits, quoted from the "Entomologist's Weekly Intelligencer," will be found in Newman's "British Moths," that any further notes would be superfluous.—ID.: *September 13th*, 1899.

Argynnis Pales, var., at the Gorner Grat.—Our Riffelalp captures in the way of butterflies did not include any novelties, excepting a very striking variety of *Argynnis Pales*, which was taken by Mr. Lemann near the Gorner Grat at over 10,000 feet. This specimen, slightly crippled, instead of having the ground colour of a bright fulvous with black tracery, as described in Kane's "European Butterflies," was of quite a dusky brown hue, and the under-side with spots confluent as in *Polyommatus Hippothoë* ab. *confluens*. *A. Pales* is at all times an exceedingly variable species, but this specimen seemed quite to stand by itself as a remarkable aberration.—R. W. LLOYD, Thurleigh Road, Balham: *October*, 1899.

Dragon-flies at the Riffelalp.—At the end of July and during the first week in August Mr. F. C. Lemann and I were staying at the Riffelalp Hotel, Zermatt, with the object of collecting butterflies, and in the hope of securing a few of the high mountain species of dragon-flies. On the whole the weather was excellent, but as regards dragon-flies we were not fortunate, as we did not see more than three or four specimens when collecting at an altitude of over 9,000 feet, and these only during the last few days of our stay. Although there were plenty of small lakes on the Gornergrat side, we saw no dragon-flies there; this I believe was owing to the fact that all the lakes were formed from glacier water, and had practically no vegetation growing in them. On the Matterhorn side we saw three or four specimens at the Schwarzsee one very fine hot day. Mr. Lemann got *Sympetrum flaveolum* on the hillside near the lake, while at a smaller lake a little further on I saw a specimen of *Eschna juncea* settle under the bank, and was fortunate enough to secure it. The Schwarzsee has a little rank vegetation growing in it, and I noticed some water beetles, so no doubt the dragon-fly larvæ are able to pick up a living there. A third specimen I saw at the same place was considerably larger than *S. flaveolum*, and had a bright red body, but unfortunately I failed to secure it. The contrast between the larger number of dragon-flies I saw on almost the only fine day I had last year in Lapland and the scarcity at Zermatt was very striking, as even on the low ground they were scarce and almost impossible to catch.—ID.

Cæcilius atricornis, McLach., near Ipswich.—I sent Mr. McLachlan a Psocid swept in a small marshy wood at Bramford, near Ipswich, on October 11th, which appeared very distinct to my eye on account of its long neck, and he tells me it is *Cæcilius atricornis*, McL., and which he has taken only once by sweeping on the banks of the Thames, close to Chertsey, that it seems to be especially fond of damp situations, and had been found upon plants actually growing in the water. I see it

was first described by him in the Ent. Mo. Mag., v, 196. In this connection I may perhaps be forgiven for mentioning another habitat for *C. pedicularius*, L., which was common in the *débris* (mostly bones) of a calf at Foxhall on September 30th. Mr. McLachlan says, *in litt.*—"It is sometimes found in very odd places. I have often noticed multitudes flying on calm hot afternoons in autumn. Once it was sent me as found in myriads when wheat was being reaped, and annoying the men by the irritation caused by it on their bare arms. Sometimes it is found in boxes of insects, and from this it was argued that it was the perfect insect of *Atropos divinatoria*, but the latter, when full grown, is 'perfect' without turning to a *Cæcilius*! I have had it from hives and old honeycomb. I believe there is a short winged form of the ♀, as in several other species."—CLAUDE MORLEY, Ipswich: October 16th, 1899.

Fourteen-jointed antennæ in a ♂ Ammophila.—Among some males of a probably new species of *Ammophila* (Group *Parapsammophila*) taken by me in Algeria last year I find one which shows a very curious eccentricity of structure. Both its antennæ are 14-jointed, 13 joints being, as is well known, the maximum and nearly universal number in all normal ♂ Aculeates. From a comparison of these antennæ, joint by joint, with those of my other specimens (which are all 13-jointed as usual), I am led to infer that the extra joint is really *additional*, i. e., not produced by a division of one joint into two, and also that it has been added *not at the apex* of the antennæ but somewhere between the third and twelfth joints. I once found and recorded in this Magazine a ♂ of *Andrena angustior*, Kby., with only 12 antennal joints; but I have never before seen or heard of a case in which the normal number has been exceeded.—F. D. MORICE, Brunswick, Woking: October, 1899.

Autumn Hymenoptera near Woking in 1899.—I have done a little collecting this autumn among the *Hymenoptera* in and round this neighbourhood, and although on the whole they seemed rather unusually scarce, I have secured a few specimens of more or less interest. These include my first British ♂ of *Prosopeia cornuta*, Smith, taken within a hundred yards of my own house, as well as several females of the same species, all on *Daucus carota*; also, at Star Hill, Woking, one specimen of *Hedychrydium coriaceum*, Dahlb., the only other recorded British specimen of which I took at Ottershaw in 1897. Near the road from Woking Station to Old Woking, on flowers on the river bank, a ♂ of *Crabro pubescens*, Shuck. At Downside, Cobham, a ♀ of *Crabro gonager*, Lep., at Chobham a ♂ of *Oxybelus mandibularis*, Dahlb., and at Frensham (in company with the Rev. A. Thornley, of South Leverton, Lincoln) two females of the same species; also, at Frensham, Mr. Thornley shown me burrows of *Andrena argentata*, Smith, which I had previously only found on two sandy spots on Chobham Common. I believe he found (though I did not) *Nomada alboguttata*, H.-S., parasitic upon it there as it is at Chobham, where I took both species this year. It is, I think, rather interesting that these two rare species should have lived together in the same burrows at Chobham for the last fourteen years to my knowledge, and probably much longer.—ID.

Amblyteles notatorius, Gr., bred.—On July 10th last I bred a ♀ of *Amblyteles notatorius* (Gr., Ich. Europ., i, p. 429) from a pupa of *Triphana fimbria*, L.

host was taken in May, 1899, at Galashiels, and the ichneumon identified by Mr. Claude Morley, at whose request I record it.—A. M. MONTGOMERY, 32, The Grove, Ealing, W.: *October 15th*, 1899.

Rare Diptera in 1899 at Glanvilles Wootton.—*Brachystoma longicornis*, Meig., figured by Meigen, vol. iii, tab. 22, fig. 6. Walker, vol. i, p. 103, says of it, "very rare, in Mr. Stephens' collection;" yet it is relegated by Mr. Verrall in his list to a place among the reputed British species. It must now be restored to its former position, as I took a couple of specimens on July 31st. *Allocotocera (Leia) pulchella*, Curt.—of this pretty species I took a pair on July 1st and 4th; it is figured in Curt. Brit. Ent., and the capture of a female is recorded by Mr. C. Matthews in Ent. Mo. Mag., vol. xxv, p. 379. I have also taken *Aciura rotundiventris* on July 4th. *Lissa dolium*, *Saltella scutellaris*, *Asindulum flavum*, *Plesiastina annulata*.—C. W. DALE, Glanvilles Wootton: *October 9th*, 1899.

Review.

NEW ZEALAND MOTHS AND BUTTERFLIES (Macro-Lepidoptera): by G. V. HUDSON, F.E.S.; 4to, with 13 plates. London: West, Newman, and Co. 1898.

Considerable enterprise has been shown in the issue of this work, and it is principally designed for the assistance of New Zealand Lepidopterists, of whom the number is at present unfortunately very small. The author no doubt anticipates that it will contribute in some degree towards a material increase of the class of students for whom it is intended, and it is most earnestly to be desired that this hope may be realized, and that the highly interesting Lepidopterous fauna of New Zealand may be adequately made known before it is destroyed by changed conditions.

Under the term of *Macro-Lepidoptera* (admitted by the author to be unscientific, but adopted for convenience) are included the *Caradrinina*, *Notodontina*, *Papilionina*, *Psychina*, and part of the *Micropterygina* (*Hepialidæ*). All the discovered species of these groups (not numbered, but apparently about 238 in all) are shortly described or diagnosed, and of almost all there are coloured figures in the plates, frequently two or more figures to a species. These figures differ in value, some being characteristic representations, whilst others are very rough; but on the whole, in conjunction with the text, they will probably enable any collector to identify almost all his specimens with little trouble. Interesting particulars of the life-history are given for a not inconsiderable number of species, and these, which are mainly from the author's own observations, are perhaps the most valuable feature of the work; one plate is devoted to coloured figures of larvæ. Records and references appear to have been carefully noted. The introduction includes a general sketch of structure and classification, and outlines of some biological phenomena which are frequently exemplified in the *Lepidoptera*; and there are two plates of anatomical details.

On the other hand there are no analytical tables of genera or species, which contribute largely to scientific lucidity; there is no attempt at grouping or classifying the recorded facts, to assist generalizations; and there is no discussion of the very interesting geographical relations of the New Zealand insects with those of other

regions. A summary might at least have been given of those genera and species which are common to New Zealand and Australia, and of those which are strictly endemic; it might have roused interest and promoted investigation.

The book is well got up, and seems carefully printed, though *Euploea* is consistently spelt *Euploæ*. Although lately advertised as "just published," it is dated 1898, and a recent attempt to obtain a copy produced a reply that it was "being reprinted;" the date may possibly be unreliable.—E. MEYRICK.

Obituary.

Richard William Fereday, F.E.S.—We much regret to hear of the death of our old friend Mr. Fereday, at Christchurch, Canterbury, New Zealand, on August 30th, in his 80th year. He was the fifth son of Mr. J. T. Fereday, of Sedgley, Staffordshire, and was educated for the legal profession, being admitted as a solicitor in 1849. When we first knew him he held a responsible post on the legal staff of the London and North-Western Railway, which he gave up some thirty years ago, and with his wife emigrated to New Zealand to join his brother, who had a sheep farm, and never returned to this country. He soon reverted to professional duties in the Colony, firstly as a solicitor, and afterwards as a barrister, and had a very large practice, from which he retired a few years ago. When in England Mr. Fereday was an enthusiastic Lepidopterist, and notes by him are to be found in the later volumes of the "Intelligencer." Socially he was of a most genial temperament, and a delightful companion in the field. During his long residence in the Colony he did very much to further a knowledge of the native *Lepidoptera*, publishing a good many papers thereon, a few in this Magazine, but mostly in the "Transactions of the New Zealand Institute," in connection with the affiliated Philosophical Institute of Canterbury, in which he took a warm interest, and of which he was at one time President; three of the very limited number of New Zealand Butterflies were first described by him. He also took a prominent part in the establishment of the Canterbury Acclimatization Society, and was on the Board of Governors of the Canterbury College. Being fond of athletic sports he took much interest in cricket and archery in the Colony. His loss will be much felt amongst the small band of Colonial entomologists. He joined the Entomological Society of London in 1881.

Samuel Stevens, F.L.S., &c. (a correction).—An error occurred in our notice of the late Mr. Stevens in last month's Magazine (p. 238). The date of his birth was March 11th, 1817, not August 11th, as there given.

Alexander Wallace, M.D.—The death is announced at Colchester on October 1st, aged 70, of Dr. Wallace, who was well known as an ardent Lepidopterist, and the captor of *Catephia alchymista*, some 40 years ago, and afterwards for his attempts to introduce sericulture into this country, the silk being the produce of the huge oriental Bombyces. If his attempt was not altogether successful, it had, at any rate, the effect of causing large importations of these insects in the egg and pupa stages, which have continued ever since; the species he mostly experimented upon was *Bombyx yama-mai*, and he published several papers on the subject in the Transactions of the Entomological Society of London, and separately.

Dr. Wallace, who was the son of a barrister, was born in London, and was educated for the medical profession at St. Bartholomew's and at Oxford. He commenced practice in London, and was physician to the Middlesex Free Hospital. Afterwards he removed to Colchester, and for some years held an official appointment there, which he gave up, and started bulb growing (especially Japanese Lilies), and his sons have now a very large and prosperous business of this nature at Colchester; he resumed his medical practice in the same town. Formerly he was a very regular attendant at the meetings of the Entomological Society of London, of which he became a member in 1858, and continued such for about 20 years.

Prof. C. G. Thomson, Hon. F.E.S.—We have received an announcement of the death of this renowned Swedish entomologist (who succeeded Zetterstedt as professor of Zoology at Lund) on September 19th, aged 75; further particulars will follow.

Hippolyte Lucas, Hon. F.E.S., who was probably the *doyen* of French entomologists, died recently at the advanced age of 86. At present we have seen no announcement of the event in the French journals. He was elected Honorary Fellow of the Entomological Society of London only last year.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *September 14th, 1899.*—Mr. J. W. TUTT, F.E.S., Vice-President, in the Chair.

Mr. Colthrup, of Barry Road, E. Dulwich, was elected a Member.

Mr. Montgomery exhibited two bred series of *Spilosoma mendica*, in one of which black longitudinal lines were well developed in both sexes. Mr. Colthrup, series of *Bryophila perla*, including fine yellow forms, and a series of *B. muralis* (*glandifera*), including several very pale specimens, both being from Eastbourne, together with a variety of *Spilosoma menthastri*, having a black border round all the wings. Mr. Buckstone, two males *in cop.* with one female at the same time, of a species of *Telephorus*; a very blue female of *Polyommatus Corydon* taken at Riddlesdown some years ago; and an example of *Chrysophanus Phlæas*, var. *Schmidtii*, taken at Beckenham in 1886. Mr. Edwards, a long bred series of *Bombyx castrensis* from near Rochester, together with preserved ova, larvæ, and pupæ; the males showed great variation. Dr. Chapman, a sample of the species of *Lepidoptera* taken in August at Arolla, S. Switzerland, some 7000 feet above sea level, including *Cupido minima*, *Erebia glacialis*, *E. Mnestra*, *E. Epiphron*, *E. Gorge*, *Setina aurita*, &c. Mr. Adkin, long series of an *Acronycta* taken at sugar in Abbott's Wood, together with bred series of *A. psi* and *A. tridens* for comparison; Dr. Chapman could give no special character for distinguishing the two species, but considered that by the general facies the majority of the specimens were *A. tridens*. Mr. Step, specimens of the rare deep water crab, *Ateacyclus septemdentatus* from Portscatho, and read full notes as to its characteristics and occurrence. Mr. Tutt, a few bred specimens of *Porthesia chrysorrhæa*, showing traces of a black dot at the anal angle of the fore-wings, the characteristic mark of *P. similis* (*auriflua*); also a pair of *Lampides bætica* taken at Fontainebleau, and referred to the abundance of the species in Europe during the present season.—HY. J. TURNER, *Hon. Sec.*

**ECTOPSOCUS BRIGGSI, A NEW GENUS AND SPECIES OF PSOCIDÆ
FOUND IN ENGLAND.**

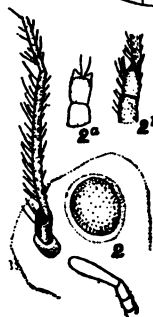
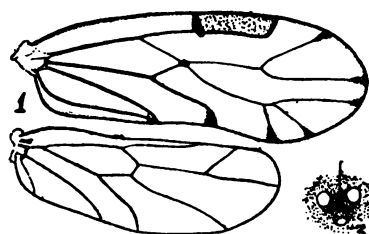
BY ROBERT McLACHLAN, F.R.S., &c.

ECTOPSOCUS, *n. g.*

General characters as in *Peripsocus*, Hag.: differs especially in the costal and dorsal margins of the anterior wings being subparallel, hence scarcely dilated in the apical portion; in the pterostigma in these wings being long-oblong (or enclosed in a nearly regular parallelogram), hardly dilated at the end; and the inner radial branch and the inner cubital branch (Reuter's nomenclature*) are confluent (or nearly so) at a point; in the posterior wings there is still more difference, because the radial sector and the cubitus are widely distant, connected by a transverse nervule.

ECTOPSOCUS BRIGGSI, *n. sp.*

Above dingy yellowish, beneath and legs paler, almost whitish. Eyes blackish.



Antennæ not longer than the wings, the thread somewhat fuliginous and strongly pilose, 3rd joint very long, 1st and 2nd joints pale, but the 2nd darker above. Head with some brownish marks behind the ocelli. Abdomen above (in life) with the segments margined with brownish, and with a brownish median longitudinal line, pygidium wholly pale. Wings hyaline; the membrane colourless: in the anterior pair the pterostigma is slightly opaque and finely granulose; at the termination of each nervure on the margins is an elongate,

triangular, blackish or fuliginous, spot, a smaller discal spot of the same colour at the point where the radial and cubital branches meet; neuration and margins hairless, the nervures mostly dusky (pale in certain lights), but distinctly blackish at their ends, and the pterostigmatic nervure is also blackish at each end, together with the strong "hook" or

"tooth" on the under-side of the inner nervule: posterior wings without distinct marginal spots.

Expanse, circ. 5 mm.

Hab.: Lynmouth, North Devon, during the month of October, 1899 (*C. A. Briggs*). Mr. Briggs took fourteen examples, chiefly amongst dead leaves on the ground, but occasionally beaten from

* I have adopted Reuter's nomenclature as being the best yet proposed, although to a novice it would be somewhat difficult to comprehend without a colour scheme. According to the more simple, but manifestly morphologically erroneous, system used in my Monograph of 1887, it would be sufficient to say that the "forked vein" is practically sessile in *Ectopsocus*, and petiolated in *Peripsocus*.

trees; decidedly scarce and difficult to obtain. I have seen four of these, of the sex of which I am somewhat doubtful, but from the small eyes they appear to be females.

This pretty little insect (which seems to form the type of a new genus on the characters mentioned) is somewhat deceptively similar (at first sight) to *Trichopsocus Dalii*, McLach., in consequence of the dark spots at the apices of the nervures on the otherwise colourless wings.

Explanation of figures.--For these figures I am indebted to my friend the Rev. A. E. Eaton, and give their explanation almost in his own words. Fig. 1, wings from *under-side* (in fluid); 1a, verrucosity ("hook" or "tooth") of inner cross vein of pterostigma, seen edgewise in front of the costa, two views of different enlargement (dried). Fig. 2, part of head, with eye, maxillary palpus, and basal portion of an antenna; 2a, basal joints of an antenna, inner-side; 2b, same, outer-side (more enlarged). Fig. 3, ocelli (greatly enlarged). Fig. 4, extremity of intermediate tarsus (greatly enlarged, and somewhat flattened, showing the empodium and arolia).

Lewisham, London :

November, 1899.

NEUROPTERA AND TRICHOPTERA OBSERVED IN
WIGTOWNSHIRE DURING JULY, 1899, INCLUDING TWO SPECIES
OF HYDROPTILIDÆ NEW TO THE BRITISH LIST.

BY KENNETH J. MORTON, F.E.S.

Any one looking over the lists of Scottish *Trichoptera* published in the "Scottish Naturalist" in 1884-5, cannot fail to notice that the records from the two great southern river systems are very meagre. Those from Tweed are indeed a perfect blank; and while those from Solway are very much better, they obviously do little more than give an outline of the Trichopterous fauna of the area, being in fact mainly the results of the collecting of Mr. Robert Service, a keen ornithologist and an excellent all-round naturalist, but who naturally did not apply himself to the Orders *Neuroptera* and *Trichoptera* with the exclusive attention of the specialist.

The Tweed area (in which I have had the opportunity of doing a little autumnal collecting quite recently) thus offered a virgin field; but when it came to carrying into effect a long-felt desire to do some summer work in the southern parts of Scotland, my inclinations were altogether in favour of the selection of one of the less-known regions of the Solway area, where, with a southern latitude, a moderate ele-

vation, mild climate, and an abundance of lakes, there was a more reasonable expectation of being able to add to the Scottish fauna some new and interesting species.

I accordingly arranged to spend the month of July in Wigtownshire, devoting what time I could to the collecting of *Trichoptera*, *Neuroptera*, and *Lepidoptera*. Believing that the more elevated districts would probably not differ much in their water insects from similar localities elsewhere in Scotland, I wished to avoid them. The lake district in the parish of Mochrum seemed most likely to suit my requirements. As other interests had, however, to be taken into account, a compromise had to be made, and we finally settled at Monreith, a pleasant little place on the west coast of the peninsula called the Machars—too far away from the lakes in question to work them exhaustively, but being within easy cycling distance I was able to pay them several visits, with most satisfactory results.

Although these lakes lie in an extensive and rather bare-looking moorland tract, they are in many respects most attractive. They teem with birds, some of the islands on one of them being the site of an extensive breeding place of the cormorant; and herons, terns, several species of gulls and other water-frequenting birds have their nesting places on the shores and islands, where they carry on their life affairs in a security which is well guarded. The lochs are named Mochrum Loch, Castle Loch (locally known as the White Loch—a favourite name, several in the district being so called), Challochglass and Fell Lochs, and Loch Hempton (besides several others which I did not visit). Mochrum Loch is, perhaps, most productive of insect life; it is naturally most sheltered, and some plantations have been made about it; the islands on it are mostly thickly wooded, and the bracken attains a luxuriance such as I have hardly ever seen before.

The only convenient collecting ground for *Neuroptera-Planipennia* was Monreith Park, which is well wooded, and contains a pretty loch (the White Loch). The latter produced some good *Trichoptera*. Monreith Burn, and a smaller burn adjacent, were also productive, while dripping rocks by the sea-shore were frequented by a number of small forms.

Extensive peat bogs are scattered over the district, and are the haunts, amongst other things, of *C. Tiphon*. They were rather disappointing with regard to *Neuroptera*. No doubt, however, they will produce far more than I was able to find during my somewhat hurried visits to most of them.

It was not surprising to find that the smaller species of *Tricho-*

ptera, which are attached to warmer conditions of water, were numerous. The character of the Trichopterous fauna as a whole is suggestive of the English lake district and Killarney. *Leptocerus senilis*, which seems to be absent from Highland lakes, *Setodes argentipunctella*, hitherto known as British from Cumberland and Killarney only, and *Æcetis furva*, new to Scotland, were all more or less common; and no less than nine species of *Hydroptilidæ* were found, all, I think, unrecorded for the Solway area, and including two species new to Britain.

The following 52 species of *Trichoptera* were observed:—

Phryganea varia, F., was found in some numbers concealed in the chinks of a dry stone wall (i. e., a wall built without mortar), near Castle Loch.

Glyptotælius pellucidus, Retz., occurred occasionally in Monreith Park.

The genus *Limnophilus* was represented by *L. rhombicus*, L., *marmoratus*, Curt., *luridus*, Curt., and *lunatus*, Curt., odd specimens of which occurred in different localities.

A ♀ of *Stenophylax permistus*, McL. (= *concentricus*, auct.), was given to me by Mr. David McDowall, gamekeeper, at Mochrum Loch, and a single ♀ of *S. latipennis* (?) was taken at Monreith. (I am indebted to Mr. Service for two perfect specimens of *Stenophylax vibex* from the Solway district, where they were taken by the Rev. Mr. Little sometime in "the thirties." The species is not, I think, recorded from Solway previously).

Sericostoma personatum, Spence.—This species was very common at the smaller burn at Monreith, and empty cases could be gathered in numbers from the bed of the stream. *Silo pallipes*, F., not common. *Goera pilosa*, F., occurred at the Mochrum Lochs. *Lepidostoma hirtum*, F., at the Lochs just named, and common at the smaller burn at Monreith.

Beræa maurus, Curt., was common at dripping rocks on the shore.

Of the genus *Leptocerus*, *L. fulvus*, Ramb., occurred at the Mochrum Lochs, but was probably just appearing; *L. senilis*, Burm., was on the other hand common; *L. dissimilis* also occurred at one of the lochs, and *aterrimus*, Steph., and *cinereus*, Curt., were common; *L. bilineatus*, L., was found at Monreith Burn. (*L. nigro-nervosus*, Retz., occurs in the Solway area, where it has been taken by Mr. Service at one of the lochs in Kirkcudbrightshire).

Mystacides azurea, L., *longicornis*, L., and *Trienodes bicolor*, Curt., were common. All the British species of *Æcetis* were taken excepting *notata*, Ramb.; *Æ. ochracea*, Curt., *lacustris*, Pict., and *testacea*, Curt., were all common at the Mochrum Lochs, while *furva*, Ramb., appeared to be restricted to the outlet of Fell Loch.

Setodes argentipunctella, McL., a charming little insect, was abundant at Mochrum Loch; it was not observed at the other lakes of the series.

Hydropsyche instabilis, Curt., appeared to breed in both the burns at Monreith, and the perfect insects were always to be seen dancing in little companies all along the shore in the evening.

Philopotamus montanus, Donov., frequent at the smaller burn near Monreith.

Wormaldia occipitalis, P., at dripping rocks, and *W. subnigra*, McL., on Monreith Burn.

Nureclipsis bimaculata, L., rather common in the same locality as *Æ. furva*.

Polycentropus flavo-maculatus, Pict., common, as usual; and one male of *P. multiguttatus*, Curt., the exact locality of which was not noted.

Holocentropus picicornis, Steph., *Cyrnus trimaculatus*, Curt., and *C. flavidus*, McL., all more or less common at the Mochrum Lochs, the last named having the wings irrorated, and not like the unicolorous form which occurs in some northern localities.

Tinodes wæneri, L., common; *T. assimilis*, McL., and *T. aureola*, Zett., not rare at dripping rocks on the shore.

Rhyacophila dorsalis, Curt., *Glossosoma vernale*, Pict., and *Agapetus fuscipes*, Curt., the last named being very common at the two burns.

Of the *Hydroptilida*, *Agraylea multipunctata*, Curt., swarmed at the Castle Loch, and was particularly abundant on one of the islands where the cormorants were breeding; the conditions in such a place do not allow of comfortable collecting. *Hydroptila forcipata*, Eaton, occurred at the Monreith burns; *H. occulta*, Eaton, was found in small numbers at a dripping spring on the shore, and *H. pulchricornis*, Eaton, was taken at Monreith Burn, but was unfortunately not recognised at the time. *Ithytrichia lamellaris*, Eaton, several specimens; locality doubtful. *Orthotrichia Tetensii*, Kolbe, was not rare at Monreith Loch. Three species of *Oxyethira* occurred, all, I think, at the Mochrum Lochs; *O. falcata*, Mort., *O. tristella*, Klapálek, and *O. simplex*, Ris. I never suspected that the species of this genus which I was taking included one (*tristella*) new to the British Isles, and the number of specimens of the genus brought home is quite small. *O. Tetensii* is also an addition to the British fauna.

Neuroptera-Planipennia were not very numerous, and, as already indicated, they were mostly taken in Monreith Park.

Sieya fuscata, F., was frequent at the loch there; *Homerohius micans*, Oliv., *lutescens*, F., *marginatus*, Steph., and *stigma*, Steph., were all found in the woods occasionally. *Chrysopa flava*, Scop., was rather common in the woods, where one example of *C. vittata*, Wesmæel, was also found. *Panorpa germanica*, L., and *Sialis lutaria*, L., were seen in small numbers in different localities.

Dragon-flies were most disappointing; so much so that I cannot allow myself to think that I found the best localities. Yet, the common species which did occur were in very great numbers, and the uniform character of the species found at the various lochs was decidedly monotonous.

One *Libellula quadrimaculata*, L., var. *prænubila*, was taken at one of the bogs, a beautiful insect in perfect condition; the species was not very common. *Sympetrum scoticum*, Don., was just appearing, and was common. *Ischnura elegans*, Lind., and *Enallagma cyathigerum*, Charp., were in swarms. *Pyrrosoma minium* and *Lestes sponsa*, Hans., were locally common. A few examples of a very red *Sympetrum* were seen about the Mochrum Lochs, but I was quite unable to catch them; they may have been *S. striolatum*, Charp., only, but they were certainly very beautifully coloured. The only other dragon-fly seen was a big *Æschna*—almost without doubt, *Æ. juncea*.

13, Blackford Road, Edinburgh: October, 1899.

A NEW GENUS OF CORIXIDÆ.

BY DR. E. BERGROTH, C.M.Z.S.

TENAGOBIA, nov. gen.

Pronotum lunuliforme, medio quam lateribus haud multo longius, margine antico rotundato, margine postico fere toto vel saltem ante scutellum plus minusve profunde arcuato-sinuato. Scutellum magnum, pronoto longius, sæpe multo longius. Cetera ut in genere Micronecta, Kirk.

TENAGOBIA MARMORATA, n. sp.

Oblongo-ovalis, glabra, nitidula, albido-testacea, fronte notulis nonnullis rubris ornata, scutello maculis duabus parvis basalibus ferrugineis signato, pronoto et hemelytris glaucis, his fusco-marmoratis, area costali albido-testacea, macula media et apicali fusca notata, venula obliqua basali, margine interno commissuraque clavi albidis, pedum posteriorum femoribus, tibiis articulisque tarsalibus apice nigrinis. Caput læve, fronte paullo rotundato-prominente, vertice basi oculo distincte latiore, prope orbitam anteriorem oculorum lineola longitudinali brevi impressula prædita, margine basali medio in tuberculum minutum nigricans elevato. Pronotum læve, capite perpauillum latius et distincte brevius, margine antico medio subangulato, margine postico ante basin hemelytrorum truncato, ante scutellum profunde sinuato. Scutellum nonnihil convexum, parte parva apicali deplanatum, basi verticis paullo latius, pronoto perpaullo longius. Hemelytra apicem abdominis paulum superantia, fere impunctata, area costali latiuscula, profunde impressa, extus late rotundata, commissura clavi scutello fere dimidio longiore. Long., 2 mm.

Venezuela.

This genus also includes *Sigara fuscata*, Stål, and the five South-American species of *Sigara* described by Buchanan White. The Venezuelan insect is smaller than any of the other known species, and well distinguished also by other characters. The genus *Micronecta* (*Sigara* auct.) has not yet been found in America, but will possibly be met with in British Columbia, as it occurs in Eastern Siberia. Dr. Horváth, who will shortly publish a Monograph of the *Micronecta*, is also of the opinion that the American species of *Sigara* must be referred to a separate genus.

Tammerfors, Finland:
November 3rd, 1899.

NOTE ON THE GENUS *ÆPOPHILUS*, SIGN.

BY DR. E. BERGROTH, C.M.Z.S.

In his "Synopsis," as well as in the 3rd and 4th editions of his "Catalogue," M. Puton places this genus in the Family *Gerridæ* as a

distinct tribe. It occupies the same place in Saunders' Hemiptera Heteroptera of the British Islands. The genus shows, however, in its organization such important differences from the *Gerridæ*, that it seems impossible to maintain this systematic position. Signoret, in his description of the genus, says that it much resembles *Ceratocombus* "comme aspect." But it has not only the *facies* of *Ceratocombus*, its general structure also brings it much nearer to the *Ceratocombidæ* than to the *Gerridæ*. There is, above all, one character that is decisive—*Æpophilus*, like the *Saldidæ* and *Ceratocombidæ*, is *pagiopod*, whilst the *Gerridæ* are *trochalopod*. (cf. Schiödt, "On some new fundamental principles in the morphology and classification of *Rhynchota*," Ann. and Mag. of Nat. Hist., Ser. 4, vol. vi, pp. 225—249). In Lethierry and Severin's "Catalogue" (1896), *Æpophilus*, upon my suggestion, was placed as a distinct Family between the *Saldidæ* and *Ceratocombidæ*, and I still regard this position as the correct one.

Æpophilus Bonnairei, Sign., also occurs in Spain: Prof. Reuter possesses a specimen from the province of Galicia, sent by Prof. Bolivar as "*Cimex* sp."

Tammerfors, Finland:

November 3rd, 1899.

NOTE ON THE *DINARDA DENTATA*, GRAV., OF BRITISH COLLECTIONS.

BY G. C. CHAMPION, F.Z.S.

The insect recorded by the late E. C. Rye under the name of *Dinarda dentata*, Grav. (Ent. Annual, 1863, p. 112), found in plenty by Messrs. Douglas and Scott in the Archbishop's Wood, near Croydon, in the nests of *Formica sanguinea*, has been treated by some entomologists as a variety of *D. Märkeli*, Kies., and by others as *D. dentata*, Grav. This being the case, I have recently submitted one of these specimens to Herr E. Wasmann for examination, he having made a special study of the species of this genus. His reply will interest British Coleopterists:—"Your *Dinarda* is not *D. pygmæa*, Wasm., nor even *D. dentata*, var. *minor*, Wasm., but must be referred to *D. dentata*, being an individual of moderate size, and with a form of thorax somewhat approaching that of *D. Märkeli*. I have already shown in my study, '*Dinarda*—Arten oder Rassen' (Wien. ent. Zeit., 1896, pp. 125—142), that this form cannot even be regarded as a distinct variety on account of numerous transitions to the type-form of thorax of *D. dentata*. *D. pygmæa* and *D. dentata*, var. *minor*, are much narrower than your specimen, also the form of the thorax and its sculpture differ from both."

It may be observed that we have in England a narrow form of *D. dentata* with the sides of the thorax strongly sinuate before the base. It has been found at Plymouth by Mr. Keys and others, and also, I believe, at Sennen, Cornwall. Of the Croydon insect there is a fair series in Mr. P. B. Mason's collection, showing considerable variation in size; and I have received a specimen agreeing with it from Herr E. Reitter from Galicia, under the name *D. pygmæa*. All these examples differ from *D. Märkeli* in their smoother surface and much smaller size.

Horsell, Woking:

November 14th, 1899.

LITHOCOLLETIS CONCOMITELLA, SP. N., AND ITS NEAREST ALLIES.

BY EUSTACE R. BANKES, M.A., F.E.S.

(Concluded from page 255).

8.—*LITHOCOLLETIS SORBI*, Frey.

Lithocolletis sorbi, Frey, Mitt. Nat. Ges. Zür., iii, 608 (1855); Tin. u. Pter. Schweiz, 338, No. 12 (1856); MT. Schweiz. Ent. Ges., i, 350, No. 31 (1865); Lep. Schweiz, 414 (1880); Hein., Schmet. Deutsch., Tin., 669, No. 1057 (1876); Snell., Vlind. Ned. Microlep., 918—9, No. 15 (1882); Sang, Ent. Mo. Mag., xxii, 262—3 (1886); Meyr., HB. Br. Lep., 741, No. 21 (1895).

= *Lithocolletis pomonella*, H.-S., Schmet. Eur., Tab. 100, figs. 775—6 (1852).

= *Lithocolletis sorbifoliella*, H.-S., Schmet. Eur., v, 328 (1855).

= *Lithocolletis padella*, Glitz, Jahr. Nat. Ges. Han., 1863, 41; Snell., Vlind. Ned. Microlep., 904, footnote 1 (1882).

= *Lithocolletis aucupariella* (Scott MS.), Sang, Ent. Mo. Mag., xxii, 262 (1886).

Larva—in long mine on under-side of the leaves of *Pyrus aucuparia* and *Prunus padus*. vi—vii, ix—x.

Pupa—x—iii, vii. Cocoon distinct.

Imago—iii—v, vii. Emerges through the upper-side of the leaf.

Broods—two. Hibernates as pupa.

Hab.—ENGLAND, widely distributed, from Durham and Yorkshire to Kent and Dorset (I. of Purbeck). SCOTLAND, Dumbartonshire (Bonhill, Malloch). CENTRAL EUROPE.

Imago.—Fore-wings shining, golden or orange-golden, more or less strongly

irrorated with fuscous in the male; basal white streak of moderate length and width, black-margined above, and rarely uniting with the first dorsal tooth. First dorsal tooth not so proportionately broad and conspicuous as in the last five species. Costal and dorsal teeth neatly black-margined internally, the first costal and first two dorsal ones being also partially black-margined externally. Dorsal margin generally with a narrow white line, or white spot, between the base and the first tooth. At the apex is a black streak, of which the apical end is often conspicuously broad, resembling an oval black spot. *Exp. al.*, 7—9 mm. *Posterior tarsi* whitish, unspotted.

Very variable in size, but averaging larger than *mespilella*, Hb., and smaller than *blancardella*, F., which two species it most nearly resembles in colour: it has, however, the ground-colour more often mixed with fuscous, and much more golden and less orange than these, whilst from *mespilella* it is also separated by its usually having a white line or spot on the dorsal margin near the base. The fact that the posterior tarsi are almost invariably *unspotted* also serves to distinguish it from both these allies.

I have compared numbers of specimens, bred from mines found on *Pyrus aucuparia* in the south of England, with the original type specimens in the Frey collection, and they are clearly identical: moreover, the male genitalia of British specimens agree precisely in every detail with those of continental *sorbi*. For this reason I cannot accept Mr. Tutt's assertion (*Ent. Rec.*, x, 168), that "it is clear that none of our known British species is *sorbi*, Frey," based as it was on Lord Walsingham's guarded statement that he had not so far "seen an English specimen agreeing with the continental *sorbi*, Frey." It is worthy of special notice that Frey mentions as a peculiar habit of *sorbi* that the imago emerges through the *upper-side* of the leaf, and Dr. Wood and I have both independently observed this habit in the British-bred moths which *on other grounds* we refer with certainty to *sorbi*. In the synonymy I have treated *L. padella*, Glitz, as identical with *sorbi*. Neither the British Museum, nor any other of our finest libraries that I have tried, contains the volume of the magazine in which Glitz's original description was published, but both the Frey and the Stainton collections include specimens actually bred by, and received from Glitz, from Hanover, as his "*padella*," and a comparison of all these with the original type specimens of *sorbi*, Frey, leaves no doubt in my mind that they are one and the same species.* The late

* Since this was written Mr. Durrant has drawn my attention to a remark by Herr P. C. Snellen, in *Vind. Ned. Microlep.*, 904, footnote 1 (1882), that *padella* is so closely allied to *sorbi* that he thinks it not unlikely that they are specifically identical, the only difference he notices being that the ground-colour of the fore-wing in the former is slightly greener than in the latter. I may add that the ground-colour of *sorbi*, bred from *aucuparia*, is somewhat variable in tone.

J. B. Hodgkinson bred two moths from among many mines found near Windermere on *Prunus padus* (*vide* Ent. Rec., x, 165): one of these, which I have not yet seen, is in the Merton collection, while the other, labelled by him "*Paduella*" (*sic*), is in my own collection, and is *sorbi*. The late J. Sang also bred a *Lithocolletis* from mines on *Prunus padus* collected in Weardale: I have not seen his specimens, but have no doubt he was right in believing them to be identical with "the mountain-ash species" (Ent. Mo. Mag., xxii, 262), by which he meant *sorbi*. The union of *padella* with *sorbi* is further justified by the fact that Dr. Wood finds the male genitalia of continental examples of *padella* precisely similar to those of British and continental *sorbi*.

9.—LITHOCOLLETIS CYDONIELLA, Fb.

Tinea cydoniella (Schiff.), Fb., Ent. Syst., iii (2), 323, No. 159 (1794); Sppl., 498, No. 98 (1798); Hb., Tin., Pl. 39, fig. 271 (c. 1803).

= *Lithocolletis pomifoliella*, Z., Is., 1839, 218 (*partim*); L. E., i, 196—9 (*partim*) (1846).

= *Lithocolletis cydoniella*, Frey, Tin. u. Pter. Schweiz, 337, No. 11 (1856); MT. Schweiz. Ent. Ges., i, 350—1, No. 36 (1865); Lep. Schweiz, 413 (1880); Snell., Tijd. v. Ent., xii, 211 (1869); Vlind. Ned. Microlep., 919—20, No. 16 (1882); Hein., Schmet. Deutsch., Tin., 668, No. 1055 (1876); Shgn., Kleinsch. M. Brand., 342, No. 225 (1886).

Larva—in mine on under-side of leaves of *Pyrus cydonia*, and more rarely, of *P. communis* and its cultivated varieties. ix—x, and probably vi—vii.

Pupa—xi—iv, and probably vii. I have no information about the cocoon.

Imago—iv—v, and probably viii.

Broods—two, doubtless, though I can only find mention of one. We learn from Snellen (Vlind. Ned. Microlep., 919—20) that the insect hibernates as a pupa, and from him and other authors that the imago emerges in the spring, viz., April—May (one specimen in the Stainton continental collection is labelled as bred on March 17th, 1859, but perhaps it was forced out rather unusually early), and from these facts one may safely assume that the species is double-brooded. *Cydoniella*, which is at present unknown in Britain, is apparently rare or overlooked, on the continent, and this probably accounts for the absence of any published information about a second brood.

Hab.—CENTRAL EUROPE.

Imago.—*Fore-wings* shining, conspicuously bright, clean, reddish-orange in both sexes, with very few black scales anywhere except in the black apical streak. Basal white streak straight, of moderate length and breadth, only occasionally dark-margined along its costal edge, and rarely, if ever, showing any tendency to unite with the first dorsal tooth. All the white teeth are strikingly clean and lustrous, the first dorsal one being rather broad and conspicuous: they are narrowly black-margined internally, and the first costal and first two dorsal teeth are also partially black-margined externally. Dorsal margin rarely with any white line or spot between the base and the first white tooth. *Exp. al.*, 7.5—8.5 mm. *Posterior tarsi* strongly dark-spotted above, as a rule.

Larger and decidedly brighter and cleaner-looking than *mespilella*, Hb., which it otherwise somewhat closely resembles. Its strikingly bright ground-colour, and clean appearance, due to its having so comparatively few black scales, are sufficient to separate it from all the other species under notice except *cerasicolella*, H.-S., from which it is distinguished at once by the breadth of the white basal streak and of the teeth, and by the ground-colour, which is brighter, being more strongly reddish orange, and less rufous.

I have failed to find any evidence of the occurrence of this species in Britain. In the Stainton British collection stands a series of twelve moths with Stainton's MS. label "*Cydoniella*" beneath it, but it does not include a single genuine *cydoniella*, which, however, is correctly represented in his continental collection. The majority of the twelve specimens were caught at Lewisham, and are *concomitella*, Bnks., while the tickets on three of the others are explained by Stainton's notebook to mean "*Lithocolletis cydoniella*? April 3, Quince, Exeter. Parfitt?:" these three, although bred, are badly set and in poor condition, but appear to be *mespilella*, as are also some specimens bred a few years ago by the Rev. C. R. Digby from mines found on quince in the Isle of Purbeck. In Ent. Wk. Int., iii, 29 (1857), Stainton, under the heading "*Lithocolletis Cydoniella*," records the finding on October 16th, 1857, of several mines of a *Lithocolletis* on a quince tree at Bideford (N. Devon), "which," he adds, "I presume will be those of *L. Cydoniella*," and Parfitt (*op. cit.*, iii, 45), following his lead, states that he has found mines of "*Lithocolletis Cydoniella*?" on quince at Exeter. I have not seen any moths bred from quince by Stainton, nor am I aware that he ever recorded anything further about his supposed *cydoniella*, but presumably the mines found by him, as well as by Parfitt who, I have no doubt, bred the three moths, above alluded to, in the Stainton collection, though I do not understand Stainton's "?" after Parfitt's name, were those of *mespilella*.

Haworth (Lep. Brit., Tin., 575) gives *cydoniella* as British on the strength of its supposed occurrence, rarely, near Chelsea, and quotes Fabricius' descriptions, but he probably applied the name incorrectly to one, though, without seeing his specimens, it is impossible to say to which, of our known British species.

The following is an attempt to tabulate the nine species noticed above :—

1. Basal white streak wavy, remarkably long and slender	2
Basal white streak straight, not remarkably long and slender	3
2. Ground-colour rufous-orange	= <i>cerasicolella</i> .
Ground-colour greyish golden-ochreous	= <i>spinicolella</i> .
3. Basal white streak showing a strong tendency to unite with first dorsal tooth...	= <i>concomitella</i> .
Basal white streak not showing a strong tendency to unite with first dorsal tooth	4
4. Hind tarsi often with dark spots	5
Hind tarsi without dark spots.....	= <i>sorbi</i> .
5. Dorsal margin generally with a white line or spot near base	6
Dorsal margin generally without a white line or spot near base	7
6. Imago larger, reddish orange-golden in both sexes.....	= <i>blancardella</i> .
Imago smaller, not reddish orange-golden in both sexes	= <i>oxyacantha</i> .
7. Imago larger and darker, particularly in the male sex.....	= <i>pyrivorella</i> .
Imago smaller and much lighter in both sexes	8
8. Ground-colour conspicuously bright reddish-orange, white teeth broader.....	= <i>cydoniella</i> .
Ground-colour not so conspicuously bright reddish-orange, white teeth narrower	= <i>mespilella</i> .

The Close, Salisbury :

August 30th, 1899.

SUPPLEMENTARY NOTES.

LITHOCOLLETIS CERASICOLELLA, H.-S. (*cf. ante*, pp. 243-4).

Additional localities are Surrey (locally common, *teste* T. A. Chapman). SCOTLAND, Dumbartonshire (Bonhill, *J. R. Malloch*).

Meyrick, in HB. Br. Lep., 741, gives as a characteristic that the black apical streak is edged above with white, and this holds good as a rule, though exceptions can be found.

It may be interesting to mention that I bred one abnormally small specimen in which, on both fore-wings, the basal streak has united with the first dorsal tooth, and the third and fourth costal teeth have united together so as to form a large white spot.

E. R. B. : November 6th, 1899.

Psammotis pulveralis, Hb., in the Isle of Purbeck.—It is an unexpected pleasure to be able to record the occurrence of this scarce and local species in the Isle of Purbeck. A male specimen, considerably the worse for wear, but sufficiently recognisable for both Mr. W. H. B. Fletcher and myself to identify it as undoubtedly referable to *Psammotis pulveralis*, Hb., was taken at Corfe Castle during the past summer by my young friend Master Rowley Helps, who, on learning how greatly his capture interested me, very generously added it to my collection. The exact date on which it was taken is unknown, but it seems pretty certain that it was either in July or quite early in August. This affords yet another instance of the proverbial "beginners' luck," for the fortunate captor only commenced collecting *Lepidoptera* this year! I believe that, as regards Britain, the stronghold of *P. pulveralis* was formerly near Folkestone, but was destroyed by a landslip some years ago, since which time the insect seems to have been very rarely, if ever, met with. Nor am I aware that, on our south coast, it has ever before occurred further west than the Isle of Wight, which is included in Hampshire.—EUSTACE R. BANKES, The Close, Salisbury: October 24th, 1899.

Notes on the habits of Lozopera Beatricella, Wlsm.—The larva is similar to those of *Lozopera dilucidana* and *L. Francillana*, of a dirty white colour; the head shining black; two black dots on the back of the second and one upon the anal segment. It feeds in the stem of the wild parsnip (*Pastinaca sativa*). My first specimen of the moth emerged on June 23rd, and its time of appearance extends from that date to the first week in July. Its time of flight is late, from about 7.30 or 8 o'clock till dark, and it flies very steadily. It is very local here.—W. PURDIE, Folkestone: November, 1899.

Colias Edusa, &c., in South-East Devon.—As an accompaniment to Mr. Walker's notes (*ante* p. 235), the following jottings are set down. *Pieris rapæ*, in this neighbourhood, largely outnumbered the other cabbage-whites: by dint of vigorous exercise with a lawn tennis bat several hundreds of them were rendered incapable of laying eggs on my plants, whilst most people's pot-herbs became skeletonized. A Spotted Flycatcher kept a look out for any that "towered" on being missed, and a Redstart picked up and swallowed cripples that fell to the ground. *Colias Edusa* (a lone female) frequented the low cliffs near the town for several weeks, reckoned from August 24th, before any other individuals appeared; it was ovipositing upon *Lotus corniculatus* at 10 a.m. on September 8th. The species was nowhere numerous, and was last seen on October 31st. *Vanessa Atalanta* became plentiful when the ivy blossomed. *V. urticae* has been rather less common than *V. Io*, and so has *V. cardui*. The second brood of *Thanaos Tages* began to issue at the end of July.—A. E. EATON, Woodlands, Seaton, Devon: November 7th, 1899.

Mutilla humeralis, Rad., = *maroccana*, Oliv.—In the October number of this Magazine, p. 227, I described the ♀ of *humeralis*, Rad. This Mons. André informs me in a letter recently received is identical with *maroccana*, Oliv., of which he believes *humeralis* to be the true ♂. The ♂ formerly associated with *maroccana* belongs to a distinct species, the ♀ of which has yet to be determined. It is a curious fact, and one which led me away, that no author, not even M. André

himself, mentions the ventral tubercles of the second abdominal segment in their descriptions of *maroccana* ♀, a character which so naturally connects it with *humeralis*.—EDWARD SAUNDERS, St. Ann's, Woking: November 13th, 1899.

Two rare ants at Gornshall.—While collecting Hemiptera and Coleoptera at Gornshall last August, I casually met with two species of ants which appear to be sufficiently uncommon to justify a record of their capture. They were—first, *Ponera contracta*, of which I got two of the blind workers; and second, *Myrmecina Latreillei*, of which I got several workers, and could certainly have got many more had I recognised the insect at the time. I am indebted to Mr. Edward Saunders for the confirmation of the species in each case.—E. A. BUTLER, 39, Ashley Road, Crouch Hill: November 13th, 1899.

Note on the habits of Diglossa sinuaticollis, Muls. and Rey.—This species occurs freely every year in April and May on the sandy shore, just above the extensive rifle ranges at Altcar, Lancashire. It is often to be found below high-tide mark travelling over the wet sand with considerable facility, or sheltering under small stones and chips of wood; but its proper habitat is just about high-tide mark, burrowing in the sand in the same haunts as *Bledius arenarius* and *Dyschirius impunctipennis*. It burrows straight down, forming a miniature well about $\frac{1}{2}$ to $\frac{3}{4}$ in. deep, in which it occurs singly or in pairs. A little practice enables one to discriminate at once between their holes and those of the *Bledius*, and the latter of course are frequently traceable for some way horizontally.—B. TOMLIN, Standcliffe Hall, Matlock: November 9th, 1899.

Recent records of Anitys rubens and Dorcatoma chrysomelina in the Manchester district.—In Canon Fowler's "British Coleoptera" *Anitys rubens* is recorded from Ringway, Cheshire, by Mr. Chappell. *Dorcatoma chrysomelina* is in the same work recorded from Stretford, Manchester, by Mr. Reston, and from Dunham Park, Manchester, by Mr. Chappell. I am able from recent captures to add another locality in the Manchester district for both these species. On August 12th, 1898, I obtained four specimens of *Dorcatoma chrysomelina* from a rotten oak tree in Trafford Park, Manchester, and on examining the same tree on June 1st, 1899, I was fortunate in finding two examples of *Anitys rubens*. During 1897 I had seen in the same tree dead portions of what evidently must have been these two species, and not *Pocadius ferrugineus*, as recorded in my paper in the Ent. Mo. Mag. for February, 1898.—J. HAROLD BAILEY, 128, Broad Street, Pendleton: November 10th, 1899.

Carabus intricatus, L., at Plymouth.—On the principle that it is better late than never, it will be perhaps well to record my capture of a pair (♂ and ♀) of *Carabus intricatus* in moss on an oak in the old Plymouth habitat on May 28th, 1898. Judging by appearances that the ♀ was gravid I decided to keep her alive, and remembering the general opinion amongst Coleopterists that this species occurs "at sugar," I commenced my experiments with that substance for food. I never saw any of it eaten, but as the beetle seemed lively and well I was content to wait and watch. After a time, however, there was a perceptible loss of size with her, so I discarded the sugar and gave minced lean raw beef instead, upon which she immediately began to feed voraciously, and her normal condition was quickly restored.

The following day I observed a yellowish-white cylindrical body resting on the earth in the box with her; its length was about 5 mm. and width about 2 mm., with sides parallel and both ends rounded. The day after I was sorry to see that its shell or skin was broken, and eventually it disappeared entirely, and no more like it were seen. Having kept the beetle alive nearly six weeks altogether, and no further developments occurring, she duly fulfilled her destiny and found a resting place in my collection beside her late companion. I should further say that at the time I tried pretty hard for several weeks to capture further examples without success, and that sugar traps and bottles baited with raw meat and set in the district by the dozen were of no avail. Many of the latter were often found unearthed and broken, turned out as I suspect by dogs, as the place is now very much frequented. I also put the ♀ alive in a small jar with coarse sample muslin tied over its mouth, and left her for nearly two days and a night near the traps referred to, in the hope that she would prove a lure: the idea was a failure as far as *Carabus* was concerned, but a nice specimen of *Oxyptoda spectabilis*, which must have entered through the meshes of the muslin, was found in the jar with the female. During the present year I have not searched for the *Carabus*.—J. H. KEYS, 6, Seymour Terrace, Plymouth: November 11th, 1899.

Coleoptera, &c., at Mary Tavy, South Devon.—At intervals in August last I spent a good many days at Mary Tavy, Dartmoor, South Devon, and availed myself of the opportunity to work at the *Coleoptera* of the district. The conditions of climate, however, were quite unfavourable. The season already much behind its time, through the lateness of spring, was made worse by long absence of rain; whilst the tropical heat which prevailed day after day burnt up the grass, baked the ground, and caused vegetation in general to droop and wither, except under favourable shelter or in wet and boggy places. Needless to say, therefore, beetles, were very scarce, and but few were noticed roaming at large. The only method of successful collecting appeared to be in persistently searching bark, *Sphagnum*, &c. But perhaps the most disappointing consequence of the conditions in question lay in the extreme immaturity of so many of the species obtained. Of *Philonthus nigrita*, for example, one or two were hardly tinged with colour, and although carefully brought home alive and tended they made but sorry specimens after all. I was fortunate, however, to secure the following species, not I think previously recorded from Devon, viz. :—*Leptusa analis* (4) under bark. Of this insect I had previously, in 1893, taken four specimens under bark at Bickleigh. In Canon Fowler's "Brit. Col.," Dean Forest, by Mr. Blatch, is the only English record for the species. *Bolitophara bella*, *Tachinus dipustulatus*, *Cryptarcha strigata*, *Ips 4-guttata*, and *Mycetophagus piceus* (18), in cossus oak; *Philonthus nigrita*, *Cytilus varius*, and *Chrysomela didymata*, in *Sphagnum*; *Homalota divisa* (6), in a dead magpie; *Omosita depressa*, *Necrobia ruficollis*, *rufipes*, and *violacea*, in the remains of a dead cow. The only other species of any interest obtained were—*Quedius attenuatus*, *Cyphon padi*, *Chaetarthria seminulum*, and *Anisotoma dubia*, in *Sphagnum*; *Gnypeta cœrulea* in river moss; *Gymnetron beccabunga*, var. *veronica*, by sweeping; *Thamiasa cinnamomea* and *hospita* in a cossus tree; *Homalota coriaria*, *Aphodius subterraneus*; and *Phlœocharis subtilissima* and *Agathidium rotundatum* under bark of fir.

Of *Hemiptera* the only noteworthy representative taken was *Eurygaster maura*.

sixteen examples; they appeared to be attached to *Hypericum elodes*, and several immature individuals put into a jar with that plant and some bog moss became fully developed in about a week. I never saw them feed, however, nor could I detect any damage to the plants done by the bugs; so that perhaps they would have thriven equally well on any other plants from the same bog.—ID.

Coleoptera in the Lake district.—The Rev. T. Wood, in the September number of this Magazine (p. 213), records the fact that in June *C. catenulatus* was very abundant on all the Fells near Ulleswater, and at all altitudes. I am usually in the Lake district, in the country between Scafell and the sea, in August, and I was struck this year with the almost entire absence of this usually common *Carabus*: like Mr. Wood I found one *C. arvensis*, but no *C. glabratus*, which usually puts in an appearance. The scarcity of beetles was probably due to the dry and hot weather. Earlier in the summer my wife took a specimen of *Callidium violaceum* in Eskdale; this is worth recording, as it does not appear to have occurred hitherto further north than Manchester, and in the latter locality it has not, as far as I know, been taken since the time of Stephens. I know of no other record further north than Binley, Coventry, where my brother took an example in 1838. Professor Allen Harker once took it by hundreds over a space of four or five years in an old summer house at Cirencester, Gloucestershire.—W. W. FOWLER, Lincoln: October 31st, 1899.

Should Leptidia brevipennis, Muls., be included in the British List?—This insect has now turned up in so many places, that it is perhaps worth while to examine its claim to a place in our list. The first notice of the capture of the beetle in England appears to be by Canon Fowler (Ent. Mo. Mag., 1882, vol. xix, p. 89). The origin of the numerous specimens recorded was an old basket "of French make from Dutch willows." In 1894 Mr. J. H. Keys, of Plymouth, came across it in swarms in the house of a friend; these specimens were traced to a wicker basket in which fruit or some kind of produce had been imported from Brittany. In 1897 Mr. T. E. Doeg, of Evesham, was investigating the insects (mostly *Scolytidae*) which had caused such destruction in the fruit gardens at Toddington, near Evesham, and found *Leptidia* (again in some numbers) on and about the damaged fruit trees; the probable explanation of this would be that the insect came from the wicker baskets in which the fruit was gathered for the market. Mr. Mosley, of Huddersfield, to whom Mr. Doeg sent some of these specimens, remarks that *Leptidia* is not uncommon in some of the fruit shops at Barnsley. Lastly, during June and July of the present year, my nephew, Mr. F. A. Newbery, has taken some two dozen specimens in the office of a wholesale druggist in the city, and although their origin has not been ascertained, they are, doubtless, from carboy baskets and hampers of foreign origin. In Canon Fowler's notice (*loc. cit.*), he has foreshadowed that the insect would very likely become naturalized, and although none of the above captures can be traced to British origin, it appears to me that the insect has at least as good a claim to a place in our Catalogues as such insects as *Rhizopertha pusilla*, *Lasioderma serricorne*, and many others.—E. A. NEWBERY, 12, Churchill Road, N.W.

Callistus lunatus, F., &c., at Chatham.—I captured four specimens of *Callistus lunatus* on October 21st from under stones on a chalky bank with a south-western aspect, at Walderslade Bottom, some three miles south of Chatham. Only one

example, taken at Queendown Warren on October 2nd, 1894, had previously been met with by me in the Chatham district. Those who only know *Callistus* from cabinet specimens can form no idea of the beauty of the little creature when alive. A visit to the same spot a week later by Mr. A. J. Chitty and myself failed to produce any more *Callistus*, but on the way thither my companion picked up a fine example of *Oxypoda spectabilis*, running rapidly on the wet road.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: November 6th, 1899.

Obituary.

John Brooks Bridgman, F.L.S.—We are sorry to see the announcement of the death of Mr. Bridgman, at Norwich, on October 6th, aged 63. He was in practice as a dentist, but had retired. As an entomologist he was well known as a student of British *Ichneumonidae*, on which insects he published many papers in the journals, and in the Transactions of the Entomological Society of London, which Society he joined in 1886, but resigned in 1893, owing to failing eyesight, which also compelled him to abandon the study of the *Hymenoptera*. He became a Fellow of the Linnean Society in 1883, and he took a warm interest in the affairs of the Norfolk and Norwich Naturalists' Society.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: September 18th, 1899.—Mr. G. T. BETHUNE-BAKER, F.L.S., President, in the Chair.

Mr. G. W. Wynn showed *Notodonta trepida*, *Dicranura bifida*, and *Cymatophora or*, bred from larvæ taken in Wyre Forest last year; also a pair of *Endromis versicolora* bred from ova from the same locality in May last year; also a specimen of *Xylophasia sublustis* taken at Hampton-in-Arden last June. Mr. J. T. Fountain, a series of *Procris statices* from Umberslade, Warwickshire, where he found a colony which was restricted to one corner only of a field. Mr. R. O. Bradley, a number of *Lepidoptera* obtained in Thibet by a sportsman who was no entomologist, and who had sent them to Prof. Bridge; they were chiefly *Geometra*, and were, as might be expected, in bad condition; it was remarked that they bore a strong general resemblance to a similar lot of British insects. Mr. Colbran J. Wainwright, a few rare *Diptera*: *Mallota cristaloides*, one example from Herefordshire; he said that this species was not known as British until the capture of a specimen in the New Forest in July, 1884, by Mr. F. C. Adams; since that date others had been taken by Mr. Adams, all, however, in the same locality, and this specimen taken in the beginning of July last near Hereford was the first known from any other part of the country; he also showed series of *Eumerus lunulatus* from St. Ives, Cornwall (26/7/99 to 7/8/99), and *E. ornatus* from Herefordshire (8 to 11/7/99), and a specimen of *E. tarsalis* from the Meuse Valley, Belgium, which he said closely resembled the third British species, *sabulonum*. Mr. G. H. Kenrick, four drawers from his collection, containing the genus *Callidryas*, and gave an account of the genus; he said that they were amongst the insects which migrate; he came across a swarm of one species himself on the borders of the Transvaal a few years ago: they formed a stream about a mile wide, and were slowly moving on, those in the rear

flying to the front, and that being continued; he said that they were a very difficult genus to collect, owing to their great speed of flight; it was almost impossible to follow them, and almost the only way to get them was to find the flowers they were frequenting and wait for them. Mr. G. T. Bethune-Baker, two drawers of *Erebia*, containing some very interesting species, chiefly European, but a few being from various parts of Asia; amongst other interesting species were *Sibo* from the Pamirs, *jordana* from Turkestan, *tianshanæa* and *kalmuka* both from the Tian-Shan mountains. Mr. R. G. B. Chase, a series of *Catocala promissa*, *C. sponsa*, *Triphana fimbria*, and *Amphipyra pyramidea*, taken at sugar in the New Forest in the second week in August last; also a series of *Rhodocera rhamni* taken at heather in the New Forest at the same time; they were all in beautiful condition, but very small; he said that at the time the Forest was almost dried up, owing to the long spell of hot dry weather, and it seemed likely that the larvæ had been unable to get sufficiently fresh food.—COLBEAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The chief Exhibitional Meeting of the year was held on *Monday, October 9th*, in the Free Library; Vice-President Dr. J. W. ELLIS occupied the Chair until the arrival of the President.

Mr. Charles Dalmer was elected a Member of the Society.

Mr. Pierce read a letter from Mr. J. Williams, of Vyrnwy, on the enormous numbers of a Dipteron which during the past summer infested the lake and its neighbourhood, causing much annoyance to the inhabitants of that district.

The Meeting then resolved itself into a *Conversazione*.

When the President, Mr. S. J. Capper, F.L.S., arrived, he expressed his gratification at seeing amongst the large number present several ladies. He urged the future attendance of Members as a duty to be gladly undertaken, and gave the visitors a hearty invitation to join the Society.

The President's exhibit included wonderful melanic forms of *Hemerophila abruptaria* and *Camptogramma bilineata*. Mr. Burgess-Sopp, *Acanthocinus ædilis*, taken at Cardiff; *Phytosus nigriventris*, new to the British List, taken at Hoylake, and *P. balticus* for comparison; he also briefly noted the history of *P. nigriventris* as a recorded British species. Mr. Crabtree exhibited and remarked upon a series of *Triphana*, including Scotch extreme forms of *T. orbona*; also a drawer of the genus *Taniocampa*, including the var. *gothicina* of *T. gothica*. Mr. Day, rarities captured in the Fen and Broad districts, and a fine lot of bred insects. Mr. Tait, his Monkswood captures, and gave his experiences with *Thecla pruni* and *Apatura Iris*, also a description of the district. Chief among Mr. Prince's exhibits were *Erebia Medea*, *Agrotis tritici*, *Heliothis marginata*, and *Rhodaria sanguinalis*. Mr. Thompson, *Pericallia syringaria* and long series of moss captures. Mr. Pierce read a note on *Thera variata* and *T. obeliscata*, and exhibited specimens. Mr. F. Birch, *Donacia cinerea* from Hatch Mere, and remarked upon its habits and the difficulty of collecting it. Dr. Cotton showed series of *Carsia imbutata*, *Nstadonta dictæoides*, and *Celæna Haworthi*, from Simonswood moss. The Rev. R. Freeman, an interesting case of Norfolk insects, including the beautiful *Halias quercana*. Mr. Tipping, series of *Erebia Medea* and *Melanthia rubiginata*. Dr. Chaster, *Pyropterus affinis* from Killarney, and other *Coleoptera* from Southport. Dr. Cotton said that *Acherontia Atropos* had been fairly common about St. Helens this autumn.—FREDK. BIRCH, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 September 28th, 1899.—Mr. A. HARRISON, F.L.S., F.E.S., President, in the Chair.

Mr. Dennis exhibited photographs to show the resting positions of *Mamestra pericaria* and *Charocampa elpenor*. Mr. Jäger, his more important captures in S. Devon this year, including *Caradrina ambigua*, *Lithosia caniola*, *Leucania albipuncta*, and *Synia musculosa*. Mr. Harrison, long and fine varied series of *Agrotis vestigialis* (*valligera*) and *A. tritici* taken this year at Wallasey. Mr. R. Adkin, specimens of the *Lepidoptera* taken at Wisley during the Society's Field Meeting in July. Mr. Edwards, a pupa of *Deilephila euphorbiae*, which had changed in a frail cocoon made in a glass-topped box. Dr. Chapman recorded an emergence of the species after eighteen days in the pupa stage. Mr. Turner, a bred series of *Cabera pusaria*, showing extreme variation in the transverse lines, and a fine female variety of *Bombyx quercus*, v. *callunæ*, with the basal foveæ suffused with the male coloration, and the sub-marginal area semi-diaphanous; it was from Carlisle. Mr. Manger, a number of interesting *Crustaceans* taken on the N. coast of Europe and Asia by some members of the mercantile expedition which annually attempts the navigation of the Obi and Yenisei. Mr. Gadge, a *Bombyx neustria*, with three perfect wings, and no trace of the left fore-wing. Mr. Colthrup, a larva of *Odonestis potatoria*, only about half grown, taken in May, together with a *B. quercus*, v. *callunæ*, in which the transverse line of the fore-wings was almost straight. Mr. Lucas, a series of the rare dragon-fly, *Sympetrum flaveolum*, and contributed notes on its occurrence; they were from Ockham Common. Mr. McArthur, specimens of *Dianthæcia carpophaga*, bred from near Brighton, including some beautiful forms with snowy patches. Mr. Tutt, a postal box of *Heterocera* he had just received from Natal, collected by Mr. Cheeseman. Mr. Harrison, specimens of the so-called jumping beans, which were seeds of a species of *Euphorbia*, tenanted by larvæ of *Carpocapsa saltitans*. The Report of the Wisley Field Meeting was communicated by Mr. Ashdown.—HY. J. TURNER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: October 4th, 1899.—Mr. G. H. VERRALL, President, in the Chair.

The President announced the death, at the advanced age of 86 years, of M. Hippolyte Lucas, an Honorary Fellow of the Society. He gave a brief account of the career, and eulogized the work, of the distinguished French Entomologist.

He also announced the death of Mr. Samuel Stevens, and in reference thereto, said the Society had to deplore the loss of one of its oldest and most highly esteemed Fellows. Mr. Stevens was formerly for many years Treasurer, and had also been a Vice-President, and during the whole period of his long connection with the Society had always shown the greatest interest in its welfare. That this interest had up to the last continued unabated was manifested by the terms of his will, in which he had made a bequest to the Society.

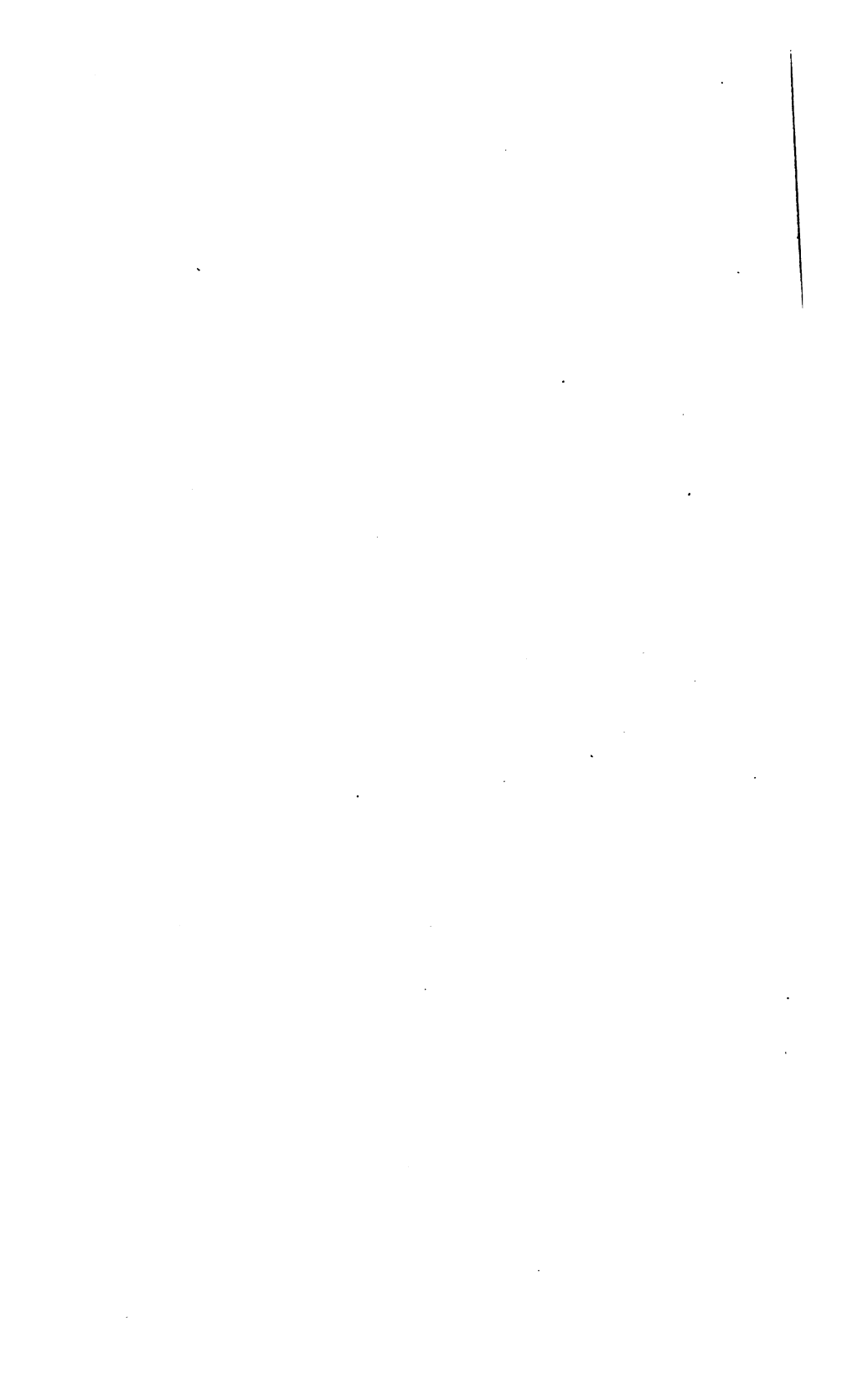
Mr. J. J. Walker exhibited, on behalf of Mr. E. G. Bayford, a specimen of *Galerita bicolor*, Drury, a North American beetle of the family *Carabidæ*, said to have been taken many years ago at Doncaster; also a remarkable variety of *Vanessa urticae*, L. (*ichnusoides*, De Selys), captured in the Isle of Sheppey on August 28th, 1899. Mr. B. A. Bower, dark aberrations of *Boarmia rhomboidaria*, Hb., in which the normal colour of the fore-wings is replaced by dark brown, causing the fuscous

markings to stand out very prominently. The President, a specimen of the "Spanish fly," *Lytta vesicatoria*, taken last June near Newmarket; he remarked that this handsome beetle was now becoming very rare in England. Mr. Colbran J. Wainwright, a number of Dipterous insects, including a long series of *Anthrax paniscus*, Rossi, taken in Cornwall at the end of July and beginning of August; a series of *Eumerus ornatus*, Mg., from Herefordshire, and *E. lunulatus*, Mg., from Cornwall; and a specimen of *Mallota eristaloides*, Lœw, taken near Hereford last July. Mr. H. J. Donisthorpe, specimens of *Dytiscus dimidiatus*, Berg., and *D. circumcinctus*, Ahr., taken last August in Wicken Fen; also eight specimens of *Athous rhombus*, Oliv., including one of the black aberration, which were taken last June in the New Forest. The Rev. F. D. Morice, three female specimens of *Exoneura libanensis*, Friese, taken at Brumana on Mt. Lebanon, Beirut; and, for comparison with them, he showed two specimens of *Ceratina cucurbitina*, Rossi, from Switzerland; he commented upon the remarkable distribution of the genus *Exoneura*, Smith, this genus having been hitherto recorded only from Australia. Mr. G. J. Arrow read a paper "On Sexual Dimorphism in the Rutelid genus *Parastasia*." Mr. W. L. Distant contributed "Descriptions of four new species of *Cicadida*;" and Mr. Claude Fuller a paper "On some species of Western Australian *Coccidæ*."

November 1st, 1899.—The President in the Chair.

Mr. Arthur M. Lea, of Hobart, Tasmania; and Mr. Charles P. Lounsbury, B.Sc., of Cape Town; were elected Fellows of the Society.

Mr. J. J. Walker exhibited two living specimens of *Bostrychus cornutus*, Fab., obtained from a wooden stool which was brought from Zanzibar. Mr. C. O. Waterhouse, a living example of *Mæcha Hecate*, Chev., a West African species of *Longicornia*. On behalf of Mr. W. Purdey, of Folkestone, Mr. C. G. Barr, et, the following species of *Lepidoptera*:—*Stigmonota trauniana*, one specimen, with the costa less spotted than usual; *Lozopera Beatricella*, six examples, together with the pupa skins protruding from a stem of *Pastinaca sativa*; *Peronea cristana*, two examples of very fine varieties; *Cledeobia angustalis*, two deeply coloured examples; *Crambus iniquatellus*, var.; *Eudorea dubitalis*, var. *ingratella*, two examples; and *Endotricha flammealis*, four examples of a dark variety. Mr. McLachlan, four examples of *Deilephila lineata*, taken by Mr. E. W. Hainworth at Victor, Colorado, at an elevation of 9000 ft., on July 23rd, 1899; also an ash-twig which had been girdled by hornets, the observation of this curious fact having been made by Mr. W. C. Boyd, of Cheshunt, from whom he received the twig. Dr. T. A. Chapman, specimens of *Erebia flavofasciata* taken at Campolungo at an elevation of 7000 ft. He stated that the species occurred only in those places where there was an outcrop of dolomitic strata belonging to the crystalline schists, and was not met with elsewhere at that elevation, nor was it to be found in association with the same strata at lower levels. Mr. H. J. Elwes gave a brief account of a collection of *Lepidoptera* made by Mrs. Nicholl and himself in a part of Bulgaria which had not previously been visited by entomologists. *Lycana eroides*, *L. Anteros*, *L. Zephyrus*, *Melitæa Cynthia*, *Erebia Gorge*, and a species which he believed to be *Cænonympha Typhon*, were a few of several interesting forms to which he directed attention.—J. J. WALKER and C. J. GAHAN, *Hon. Secs.*

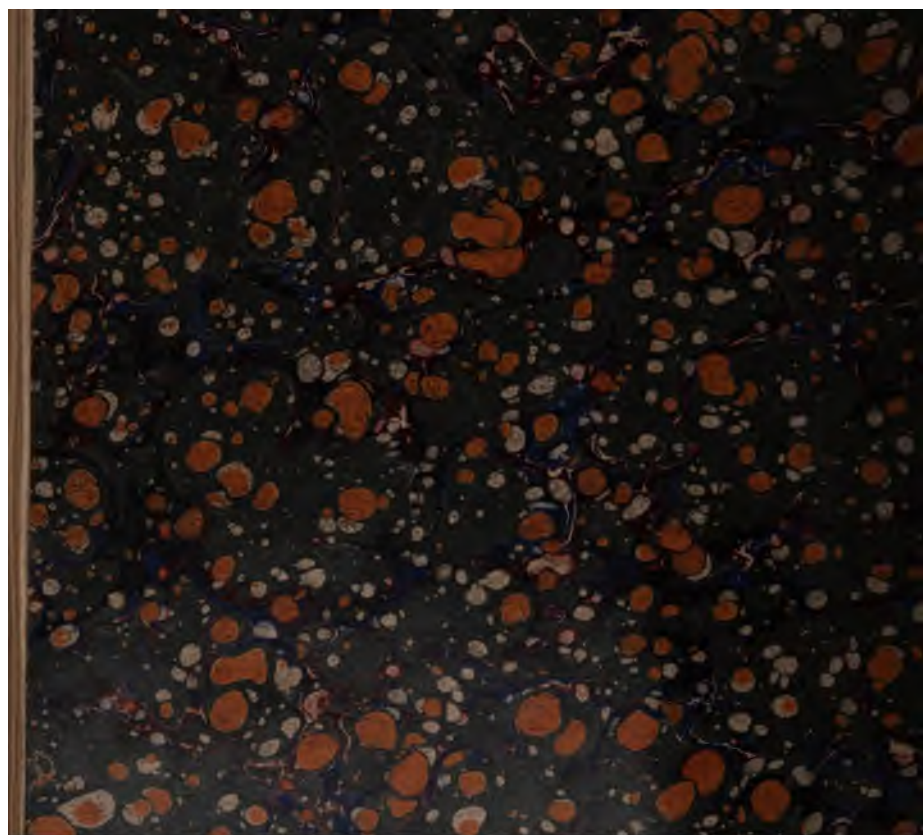


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